

# **EXHIBIT 2**

## **Redacted Expert Report of Professor Robert H. Topel**

Highly Confidential Under Protective Order

**UNITED STATES DISTRICT COURT FOR THE DISTRICT OF NEVADA**

CUNG LE, et al.,

Plaintiffs,

v.

ZUFFA, LLC d/b/a ULTIMATE  
FIGHTING CHAMPIONSHIP and UFC,

Defendants.

Case No. 2:15-cv-01045-RFB-PAL

**Expert Report of Professor Robert H. Topel**

**October 27, 2017**

## Highly Confidential Under Protective Order

**TABLE OF CONTENTS**

I.	Introduction.....	1
A.	Qualifications .....	1
B.	Summary of Allegations and Dr. Singer’s Opinions .....	2
C.	Summary of Opinions.....	8
II.	Requirements for Showing That Conduct is Anticompetitive.....	14
III.	The UFC Succeeded by Procompetitive Means.....	18
A.	The UFC Built and Grew the Business of MMA, Increasing Consumer Choice, and Creating a Product Consumers Value.....	18
B.	The UFC Has Pro-Competitively Increased Athletes’ Pay, Output, and Consumer Choice .....	23
C.	The UFC Succeeded by Building and Promoting Talent.....	25
IV.	The UFC Faces Significant Competition .....	26
A.	Low Barriers to Entry Mean That the UFC Faces Competition .....	26
B.	The UFC Has and Will Continue to Face Significant Competition.....	29
V.	Zuffa’s Contractual Provisions Are Procompetitive .....	34
A.	Competing MMA Promoters Use Similar Contract Provisions.....	34
B.	Exclusivity and Multi-Bout Contracts Assist in Protecting Promoters’ Investments and Building a Business .....	36
C.	Contractual Provisions Reduce Transaction Costs and Increase Efficiencies .....	38
D.	Other Procompetitive Benefits of Zuffa’s Contract Provisions .....	42
1.	Tolling Provisions.....	42
2.	Right to Match .....	43
3.	Champion’s Clause .....	46
4.	Ancillary Rights Provision.....	47
5.	Retirement Clause.....	48
E.	Dr. Singer Ignores the Effect of Free-Riding and Other Procompetitive Efficiencies.....	48
F.	Zuffa’s Contracts Do Not Impair Athletes From Going to Other Promoters .....	50
1.	Contract Duration .....	50
2.	Staggered Contracts Mean That Athletes Are Constantly Becoming Available to Competing Promoters .....	52
G.	Dr. Singer’s Claim That Zuffa Exploited Contract Terms to Renew Athletes’ Contracts on Terms Favorable to Zuffa Is Not Supported by the Evidence .....	52
VI.	Dr. Singer Does Not Understand Basic Labor Economics or the Operation of Labor Markets: Economic Models Do Not Predict That a Worker Should Be Paid a Constant Fraction of a Firm’s Revenue.....	55

## Highly Confidential Under Protective Order

A.	The Correct Way to Measure MMA Athlete's Compensation Is the Athlete's Marginal Revenue Product.....	55
B.	Standard Economic Models of Competitive Labor Markets Make Predictions About the Level of Worker Pay, Not About Worker Pay as a Share of Revenue .....	57
C.	Dr. Singer Is Incorrect When He Claims Share of Revenue Is Equivalent to the Athletes' Marginal Revenue Product .....	58
D.	The Correct Way to Evaluate Compensation Is Based on the Dollar Amount MMA Athletes Are Paid.....	60
VII.	Dr. Singer's Impact Regression Is Flawed .....	62
A.	Dr. Singer's Regression Model Is Not Informative About Zuffa's Monopsony Power Because It Uses the Wrong Dependent Variable.....	63
B.	Additional Errors in Dr. Singer's Regression Model Bias His Results .....	65
1.	Strikeforce Is Not an Appropriate Benchmark for Zuffa .....	66
2.	Dr. Singer's Regression Model Predicts Zero Damages After Removing the Strikeforce Benchmark.....	68
3.	By Construction, Using Revenue-Weighted Foreclosure Shares Generates a Mechanical Negative Correlation Between Foreclosure and Compensation .....	70
C.	The Same Errors That Affect Dr. Singer's Regression for the Bout Class Affect His Regression for the Identity Class Subgroup.....	73
VIII.	Other Methods Show How Athletes Have Benefitted: Zuffa Athletes Pay Has Grown.....	74
IX.	Zuffa's Acquisitions Did Not Give Zuffa Market Power in the Input or Output Markets .....	76
A.	The MMA Promoters Acquired by Zuffa Were Small, Exiting the Market, or Both .....	76
B.	The Strikeforce Acquisition Was Pro-Competitive .....	78
C.	Strikeforce Athletes Benefitted After Zuffa Acquired Strikeforce.....	79
D.	Barriers to Entry for MMA Promoters Are Low .....	81
E.	There Is No Direct Evidence That the Challenged Conduct Excluded Rivals.....	83
X.	Dr. Singer Arbitrarily Defines Foreclosure for the Purpose of Assessing Injury and Damages .....	84
A.	Under Dr. Singer's Measure of Contract Duration, Foreclosed Athletes Can Include Athletes who Were Under Contract With Zuffa for Significantly Less Than 30 Months .....	86
XI.	Dr. Singer Does Not Demonstrate Causation of Competitive Versus Anticompetitive Conduct; He Simply Defines a But-For World as a World With More Competition.....	87
XII.	Dr. Singer's Foreclosure Framework Means That He Has Not Even Attempted to Demonstrate That Many of Plaintiffs' Allegations Had an Anticompetitive Effect.....	88
XIII.	Dr. Singer's Definition of a Relevant Athlete Market Is Flawed .....	89
A.	Dr. Singer's "Tracked", "Headliner", and "Ranked" Measures Do Not Account for the Competitive Pressure Created by Potential Entry .....	90
B.	Dr. Singer's "Tracked" Measure of the Relevant Input Market Is Neither Comprehensive Nor Consistent, Because FightMetric Does Not Include All Major MMA Promoters, Only Those That Third Parties Are Willing to Pay For .....	91

## Highly Confidential Under Protective Order

C.	Dr. Singer’s “Headliner” Measure of the Relevant Input Market Conflates Athletes’ Ability With Promoter Acumen and Raises Questions About the Commonality of the Proposed Class .....	93
XIV.	Dr. Singer’s Use of Weighted Shares Is Flawed .....	95
A.	Dr. Singer’s Revenue-Weighted Share Calculation Is Flawed .....	95
B.	Revenue-Weighted Input Shares are Flawed Because They Do Not Account for Differences in Promoters’ Revenues That Are Attributable to Factors Unrelated to Athletes .....	96
C.	Without Revenue-Weighted Shares, Dr. Singer’s Calculations Do Not Show Impact or Damages.....	97
D.	Revenue-Weighted Input Shares Imply That Firms With Significant Market Power in the Output Market Also Have a Large Share of the Input Market, a Conclusion Not Accepted in the Economics Literature .....	97
E.	Dr. Singer’s Rank-Weighted Share Calculation is Flawed.....	98
F.	Other Deficiencies in Dr. Singer’s Input Market Assessment .....	99
1.	Dr. Singer Miscalculates Athletes and His Assessment of Foreclosure Is Flawed .....	99
2.	Dr. Singer Improperly Excludes Other Combat Sports From His Input Market.....	101
3.	Dr. Singer Fails to Properly Define the Geographic Market.....	101
XV.	There Is No Direct Evidence That Zuffa Has Market Power .....	102
A.	Zuffa Did Not Suppress Athlete Compensation Below Competitive Levels.....	102
B.	There Is No Evidence That Zuffa Restricted the Supply of Athlete Services.....	105
C.	Zuffa’s PPV Price Increases Were Not Anticompetitive, and Zuffa Did Not Restrict the Supply of PPV or Live Events .....	106
1.	Zuffa Did Not Increase PPV Prices and the Decline in PPV Viewership Is Unrelated to the Challenged Conduct .....	106
2.	Zuffa’s Conduct Did Not Lead to a Decrease in the Total Supply of Live MMA Events .....	109
D.	There is No Evidence That Zuffa Had the Power to Exclude Rivals .....	112
XVI.	Dr. Singer Does Not Offer Meaningful Evidence That a Common Compensation Structure Exists for Zuffa Athletes .....	113
A.	Dr. Singer Does Not Understand and Mischaracterizes Zuffa’s Compensation Structure .....	113
B.	Dr. Singer’s Regression of Athletes’ Compensation on Other Athletes’ Compensation Is Also Flawed and Provides No Evidence of a Common Compensation Structure .....	115
C.	Dr. Singer’s Regression of Compensation on Common Factors Overstates the Fraction of Compensation Explained by Common Factors .....	118
D.	Dr. Singer Does Not Demonstrate Common Impact on the Identity Class .....	118
XVII.	Dr. Singer’s Damages Calculations Are Irretrievably Flawed .....	120
A.	Dr. Singer Arbitrarily Chooses a Foreclosure Share That Generates an Arbitrary But-For Compensation Level .....	120
B.	Dr. Singer Does Not and Cannot Directly Measure Damages for All Class Members .....	121
C.	Revenue Share Is the Wrong Measure of Athlete Compensation.....	123

Highly Confidential Under Protective Order

1. There Are No Damages Using the Proper Measure of Athlete Compensation..... 124

D. There Is No Basis for Dr. Singer’s Calculation of Damages for the Identity Class..... 125

XVIII. Other Arguments Dr. Singer Makes Are Unsupported by the Evidence..... 125

A. LOAs Are Used at the Request of Athletes, Not as a Basis to Hide Compensation..... 125

B. Counter-Programming is Procompetitive and Increases the Options For Consumers..... 126

C. Zuffa Did Not Use Litigation as a Tool to Stifle Competition ..... 129

D. Non-Compete Agreements Did Not Affect Zuffa’s Competition in the Marketplace ..... 130

XIX. Conclusion..... 132

Highly Confidential Under Protective Order

**I. INTRODUCTION**

**A. QUALIFICATIONS**

1. I am Robert H. Topel, the Isidore Brown and Gladys J. Brown Distinguished Service Professor of Economics at The University of Chicago Booth School of Business.

2. I am an economist, and I specialize in (among other things) microeconomics, which is the study of markets, pricing, and firm and industry behavior. I received a B.A. in economics from the University of California, Santa Barbara in 1974, and a Ph.D. in economics from the University of California, Los Angeles in 1981. In addition to my position at the Booth School of Business at the University of Chicago, I have been a member of the faculties in the Department of Economics at the University of Chicago and the Department of Economics at the University of California, Los Angeles. At these institutions, I have taught courses on Markets and Prices, Economic Theory, Labor Markets, Empirical Methods in Economics, Compensation and Personnel Policies, Industrial Organization and Antitrust, Business Strategy, and Law and Economics. I am also the Director of the George J. Stigler Center for the Study of the Economy and the State and the Co-Director of the Energy Policy Institute at Chicago, both at The University of Chicago.

3. From 1993 to 2003, I served as the Editor of the *Journal of Political Economy*, and from 1991 to 1993 I was a member of the Editorial Board of the *American Economic Review*, two of the leading professional publications in economics and economic theory. I am also a past founding editor of the *Journal of Labor Economics* (1982 to 1992), and I currently am a member of the Editorial Advisory Board of the *International Journal of the Economics of Business* and the Advisory Board of the Economics Research Network. I am a Research Associate of the National Bureau of Economic Research, an elected member of the Council on Income and Wealth, an elected Founding Member of the National Academy of Social Insurance, and a Fellow of the Stanford University Center for the Study of Poverty and Inequality. In 2004, I was elected a Fellow of the Society of Labor Economists. In 2005, I received the Eugene Garfield Award for contributions to the economics of medical research, and, in 2007, I received the Kenneth Arrow Award from the International Health Economics Association.

## Highly Confidential Under Protective Order

4. I have held various visiting and research positions with the Board of Governors of the Federal Reserve, the World Bank, the Economics Research Center of the National Opinion Research Center, the Brookings Panel on Economic Activity, the Rand Corporation, and the Center for the Study of the Economy and the State. I have published numerous articles in academic literature. My curriculum vitae appears in Appendix B.

5. I am also a Senior Consultant at Charles River Associates (“CRA”), an economics consulting firm specializing in the application of economic theory and statistics to legal and regulatory issues. I have consulted and served as an expert on liability, damages, and class certification issues in a number of antitrust matters. CRA is paid \$1,050 an hour for my time spent on this matter, and I receive compensation from CRA based on its billings in this case. My analysis is supported by colleagues at CRA.

6. I have been retained by counsel for Zuffa, LLC d/b/a Ultimate Fighting Championship and UFC (collectively, “Zuffa”) to serve as an expert in economics in the above-captioned case. Specifically, I was asked by counsel for Zuffa to respond to the expert report filed by Dr. Hal J. Singer on behalf of Plaintiffs.<sup>1</sup> My work is ongoing, and I will supplement it if I become aware of new information that affects my conclusions. The materials that I relied on in forming my opinions are listed in Appendix C and are cited throughout my report. The complete details of the calculations that I describe in this report are contained in the computer programs that accompany the report. In conjunction with the databases listed in Appendix C, these computer programs can be used to replicate the calculations referenced in my report.

**B. SUMMARY OF ALLEGATIONS AND DR. SINGER’S OPINIONS**

7. Mixed martial arts (“MMA”) is a combat sport that combines techniques from several disciplines, including boxing, wrestling, karate, muay thai, Brazilian jiu jitsu, and judo. As I describe in detail in Section III, when Zuffa acquired UFC in 2001, MMA was a fringe sport. There were few standard rules, no weight classes, and state athletic commissions would not sanction MMA bouts. Immediately following the acquisition of UFC, Zuffa expended significant resources in legitimizing MMA. Zuffa was a prime mover in creating a unified set of rules for

---

<sup>1</sup> Expert Report of Hal J. Singer, Ph.D., *Cung Le, et al., v. Zuffa, LLC d/b/a Ultimate Fighting Championship and UFC*, Case No. 2:15-cv-01045-RFB-PAL (D.Nev.) (August 31, 2017) [hereinafter SINGER REPORT].



## Highly Confidential Under Protective Order

the sport and in convincing state athletic commissions to sanction MMA. Nevada was among the first states to do so in August 2001, four months after the UFC acquisition. Other states followed, and MMA has now been sanctioned by state athletic commissions in all 50 states. At the same time, Zuffa worked hard to promote its athletes and events with consumers and raise the profile of MMA.

8. These efforts by Zuffa, and Zuffa's skill in providing consumers with an attractive MMA product, grew the market for MMA, benefiting athletes, consumers, and competing promoters. Plaintiffs, a proposed class of MMA athletes,<sup>2</sup> and Dr. Singer ignore these benefits and focus on the results of Zuffa's efforts, which have made it the market leader among MMA promoters. Specifically, Plaintiffs allege that Zuffa's conduct was an attempt to acquire, maintain, and enhance market power in two related antitrust markets.<sup>3</sup> The first is the market for professional MMA athletes, which Dr. Singer refers to as the Input Market; the second is the market for live professional MMA events, which Dr. Singer refers to as the Output Market.<sup>4</sup>

9. Dr. Singer identifies participants in the Input Market using three alternative definitions. The first is based on athletes who fought for one of nine MMA promoters tracked in the FightMetric database (the "Tracked" market).<sup>5</sup> FightMetric is a service that collects information on MMA bouts, including bout-level information such as the number of strikes landed by an athlete, takedowns made by an athlete, and so on.<sup>6</sup> The second definition adopted by Dr. Singer expands the Tracked market to include any MMA athletes ranked in the FightMatrix database if that athlete fought for a promoter that has ever held an event in North America.<sup>7</sup> FightMatrix (not to be confused with FightMetric) is an online database that provides current and historical

---

<sup>2</sup> Consolidated Amended Antitrust Class Action Complaint, *Cung Le, et al., v. Zuffa, LLC d/b/a Ultimate Fighting Championship and UFC*, Case No. 2:15-cv-01045-RFB-PAL (D.Nev.) [hereinafter COMPLAINT], at § V.

<sup>3</sup> COMPLAINT at ¶ 4.

<sup>4</sup> COMPLAINT at ¶ 4; SINGER REPORT at ¶ 2.

<sup>5</sup> SINGER REPORT at ¶¶ 108-109.

<sup>6</sup> Declaration of Rami Genauer (October 26, 2017) [hereinafter GENAUER DECL.].

<sup>7</sup> SINGER REPORT at ¶ 110.

## Highly Confidential Under Protective Order

ranking of MMA athletes by division.<sup>8</sup> In addition, Dr. Singer includes in this second market any MMA athlete who fought for the MMA promoter, ONE Championship; he refers to this as the “Ranked” market.<sup>9</sup> Dr. Singer’s third Input Market definition is substantially narrower: starting from his Ranked market, he includes only those MMA athletes who are ranked in the top 15 of their respective division in FightMatrix (the “Headliner” market).<sup>10</sup>

10. Starting from these three Input Market definitions, Dr. Singer then defines the Output Markets to include live MMA events in which the participating athletes are in the Input Markets.<sup>11</sup>

11. As described by Dr. Singer, Zuffa’s anticompetitive scheme foreclosed rivals and impaired the ability of competitors to compete with Zuffa.<sup>12</sup> The key components of this alleged scheme included: Zuffa acquiring other MMA promoters;<sup>13</sup> Zuffa entering into exclusionary contracts with athletes, which Dr. Singer argues were effectively perpetual and foreclosed rivals of the key inputs (the athletes themselves) needed to be a successful MMA promoter;<sup>14</sup> and Zuffa impairing rivals in other ways, including, among other things, counter-programming against MMA events promoted by competitors, preventing athletes from using clips of their UFC bouts, and denying competitors access to sponsors and venues.<sup>15</sup> Taken together, Dr. Singer refers to these actions as the “Challenged Conduct.”<sup>16</sup>

12. As indirect evidence of its market power in the Input Market (*i.e.*, monopsony power), Dr. Singer argues that Zuffa has a high share of the Input Market measured using either his

---

<sup>8</sup> FightMatrix, “FAQ,” available at <http://www.fightmatrix.com/faq/>.

<sup>9</sup> SINGER REPORT at ¶ 110.

<sup>10</sup> SINGER REPORT at ¶ 112.

<sup>11</sup> SINGER REPORT at ¶ 115.

<sup>12</sup> SINGER REPORT at ¶ 2.

<sup>13</sup> SINGER REPORT at § II.A.1.

<sup>14</sup> SINGER REPORT at §§ II.B.1, II.B.2, II.C.

<sup>15</sup> SINGER REPORT at §§ II.A.2, II.B.3.

<sup>16</sup> SINGER REPORT at ¶ 2.

## Highly Confidential Under Protective Order

Tracked, Ranked, or Headliner definitions.<sup>17</sup> In calculating shares within these proposed Input Markets, Dr. Singer argues that it is appropriate to weight athletes by either the revenue associated with each athlete's promoter, or by the inverse of the athlete's ranking.<sup>18</sup> In so doing, Dr. Singer argues that he has accounted for the fact that not all MMA athletes are substitutable in promoting events, and that athletes signed by Zuffa are of higher quality than those who fight for other promoters.<sup>19</sup>

13. Similarly, Dr. Singer argues that there is indirect evidence of Zuffa's market power in the Output Market (*i.e.*, monopoly power), because Zuffa accounts for a high share of revenue earned by MMA promoters,<sup>20</sup> there are barriers to entry in MMA promotion,<sup>21</sup> and Zuffa is widely recognized by industry participants as the dominant promoter of live professional MMA events.<sup>22</sup>

14. As direct evidence of Zuffa's market power, Dr. Singer claims to find that Zuffa has suppressed its athletes' compensation, Zuffa has pricing power over MMA events, Zuffa has restricted demand for MMA athletes' services, Zuffa has restricted the output of MMA events, and Zuffa has excluded and impaired competitors.<sup>23</sup> In assessing direct evidence of Zuffa's alleged market power in the Input Market (*i.e.*, whether Zuffa suppressed MMA athletes' compensation below competitive levels), Dr. Singer argues that economic models of the labor market predict what a worker would be paid as a fraction of a firm's revenue.<sup>24</sup> Thus he claims that evidence of Zuffa exercise of monopsony power will be reflected in a reduction in an MMA

---

<sup>17</sup> SINGER REPORT at ¶¶ 128-29 and Figure 1.

<sup>18</sup> SINGER REPORT at ¶ 128.

<sup>19</sup> SINGER REPORT at ¶ 128

<sup>20</sup> SINGER REPORT at § III.A.5.

<sup>21</sup> SINGER REPORT at §§ III.A.6 and III.A.7.

<sup>22</sup> SINGER REPORT at § III.A.8.

<sup>23</sup> SINGER REPORT at §§ III.B.1-III.B.5.

<sup>24</sup> SINGER REPORT at n. 454.

## Highly Confidential Under Protective Order

athlete's pay as a fraction of event revenue. He does not, however, investigate whether the pay received by Zuffa athletes increased or decreased during the class period.

[REDACTED]

[REDACTED]

---

<sup>25</sup> SINGER REPORT at § III.D.1.

<sup>26</sup> SINGER REPORT at ¶¶ 171-172, 182.

<sup>27</sup> SINGER REPORT at Table 6.

<sup>28</sup> SINGER REPORT at ¶¶ 186-187.

<sup>29</sup> SINGER REPORT at § IV.C.

[REDACTED]

<sup>31</sup> SINGER REPORT at Tables 10-11.

[REDACTED]

[REDACTED]

<sup>37</sup> See *supra* ¶ 11.

Highly Confidential Under Protective Order

[REDACTED]

19. [REDACTED]

C. SUMMARY OF OPINIONS

20. Based on the analyses described in the body of my report, I have reached the following main opinions:

21. **Opinion 1:** Zuffa's success results from its strategy of market leadership. Zuffa has expanded the market for MMA by evangelizing it acceptance, aggressive competition on the merits, and promotional investments in both fighters and events. Zuffa is a prime example of the kind of superior skill, foresight, and industry that is the hallmark of vigorous competition, which has benefitted consumers, MMA athletes, and other MMA promoters.

[REDACTED]

---

<sup>38</sup> SINGER REPORT at § VII.

<sup>39</sup> SINGER REPORT at § VII.A.

<sup>40</sup> SINGER REPORT at § VII.D.

## Highly Confidential Under Protective Order

[REDACTED]

23. **Opinion 3:** On the output side, Zuffa’s market-expanding strategy and investments have also benefitted consumers and other MMA promoters. Zuffa has increased the number and variety of MMA events available to consumers, and viewership—the correct measure of market expansion and consumption—has sharply risen during the class period. Zuffa was the leader in laying the regulatory groundwork for acceptance of MMA as something other than a fringe sport, which created the platform on which Zuffa and rival MMA promoters compete.

24. **Opinion 4:** Barriers to entry for MMA promoters are low. Competing promoters have ready access to inputs and facilities needed to stage MMA events, including access to MMA athletes, venues, broadcasters, and sponsors. Zuffa’s efforts have helped rivals overcome the most significant barrier to entry for MMA promoters through its work to get MMA regulated and sanctioned by state athletic commissions—MMA is now sanctioned in all 50 states. Low entry barriers are demonstrated by the rapid expansion of competitors including Bellator, Professional Fighters League, ONE Championship, and Absolute Championship Berkut. In addition to competing against Zuffa in the Output Market, these promoters also compete with Zuffa to sign MMA athletes.

25. **Opinion 5:** [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

26. **Opinion 6:** Dr. Singer adopts an economically incorrect metric to support his opinion that Zuffa’s conduct increased its monopsony power, allowing it to reduce MMA athletes’

## Highly Confidential Under Protective Order

compensation. Standard and widely-accepted economic models of competitive labor markets explain the determination of workers' wages, measured in dollars per worker. Dr. Singer ignores these models. Instead, he asserts without foundation that an MMA athlete's compensation should be measured as a share of event revenues rather than as dollars paid. This metric is economically incorrect: there is no economic basis for Dr. Singer's assumption that a decline in the share of total event revenue paid to an MMA athlete is evidence of anticompetitive harm. In fact, procompetitive, market-expanding conduct by Zuffa would cause this share to decline in the absence of any harm to an MMA athlete, even if actual compensation of these athletes rose—which in fact it did.

[REDACTED]

[REDACTED]



Highly Confidential Under Protective Order

[REDACTED]

29. **Opinion 9:** Zuffa's acquisitions of other MMA promoters did not allow Zuffa to acquire or exercise monopoly or monopsony power. Plaintiffs allege that the acquisition of competing MMA promoters was a contributor to Zuffa's monopoly and monopsony power. As an initial matter, this claim fails because barriers to entry for MMA promoters are low, so there is no basis on which to conclude that a temporary reduction in competitors in the marketplace due to an acquisition would have long-term effects on competition. The MMA promoters acquired by Zuffa were also small: Adopting Dr. Singer's metrics for measuring Zuffa's foreclosure share, none of these acquisitions had a substantial impact on Zuffa's share.

[REDACTED]

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

36. I discuss each of these opinions in more detail in the remainder of my report.

Highly Confidential Under Protective Order

## II. REQUIREMENTS FOR SHOWING THAT CONDUCT IS ANTICOMPETITIVE

37. Dr. Singer concludes in his report that the Challenged Conduct was anticompetitive because Zuffa enjoyed “substantial market power,” and exercised that power through the Challenged Conduct to “substantially foreclose and harm competition.”<sup>41</sup> Since the claim that the Challenged Conduct is anticompetitive is fundamental to Dr. Singer’s conclusions, it is crucial to understand how economists determine what does and does not constitute anticompetitive conduct. This section describes my understanding of that determination, and identifies how the analyses I conduct in the remainder of the report lead to my conclusion that the Challenged Conduct was not anticompetitive.

38. As a starting point, possessing monopoly or monopsony power in and of itself is not anticompetitive. Rather, antitrust economics distinguishes between benign monopoly power that is obtained through a superior product, business acumen, or historic accident and monopoly power that is obtained or maintained through anticompetitive conduct. In particular, economic principles promote vigorous competition on the merits, but do not imply that firms that have developed market power through legitimate means should be constrained.

39. In Section III of my report, I briefly describe Zuffa’s innovative and procompetitive business strategy that led to its rapid growth and success. It is fair to say that Zuffa’s strategy was the driving force behind the development and widespread acceptance of MMA as a professional sport, which benefited consumers, MMA athletes, and other MMA promoters. Section IV shows that Zuffa’s innovations and success have fostered a highly competitive marketplace, with numerous competitors striving to build on, and if possible, supplant, Zuffa’s success.

[REDACTED]

---

<sup>41</sup> SINGER REPORT at ¶¶ 5, 6, 39.

## Highly Confidential Under Protective Order

[REDACTED]

41. Turning to the first hallmark of market power, excluding competition, both legitimate competition on the merits and anticompetitive conduct can lead to a reduction in the number of competitors or a reduction in the shares of competitors. But a reduction in the number of competitors or the shares of those competitors that result from competition on the merits is a procompetitive story, and Dr. Singer agrees that Zuffa's conduct should be "considered in light of any procompetitive effects."<sup>42</sup>

42. [REDACTED]

---

<sup>42</sup> SINGER REPORT at ¶179, citing *ZF Meritor, LLC v. Eaton Corp.*, 696 F.3d 254, 271 (3d Cir. 2012).

<sup>43</sup> SINGER REPORT at § VIII.

<sup>44</sup> Dr. Singer testified that he did not examine the contractual terms used by other MMA promoters. (Deposition of Hal J. Singer, PhD. (September 27, 2017) [hereinafter SINGER TR.] at 171-72, 202.)

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>45</sup> SINGER REPORT at ¶ 138, citing ZUF-00162329-82. See also SINGER REPORT at ¶¶ 104, 111, 114.

<sup>46</sup> SINGER REPORT at ¶ 159, citing WME-ZUFFA-00013978-79.

## Highly Confidential Under Protective Order

[REDACTED]

45. Dr. Singer attempts to salvage Plaintiffs' claim of reduced MMA athlete compensation caused by the acquisition of monopsony power by measuring an athlete's compensation as a share of event revenues, rather than simply dollars paid. This metric is economically incorrect. It is also inconsistent with all applications of antitrust harm of which I am aware. I show in Section VI that Dr. Singer's measurement of a monopsony effect fails on theoretical grounds: revenue share is the wrong measure of anticompetitive impact, which means that Dr. Singer's test for anticompetitive impact and his estimates of "harm" are meaningless. Specifically, there is no theoretical basis for Dr. Singer's presumption that a decline in the share of total event revenue paid to an MMA athlete is evidence of anticompetitive harm. In fact, procompetitive, market-expanding conduct by Zuffa would cause this share to decline in the absence of any harm to MMA athlete, even if actual compensation of these athletes rose.

[REDACTED]

---

<sup>47</sup> SINGER REPORT at ¶ 190.

<sup>48</sup> SINGER TR. at 294-96.

## Highly Confidential Under Protective Order

47. I also review Dr. Singer’s discussion of alleged monopoly price increases for MMA events, and show that he does not demonstrate a connection between the purported price increases and either market power or the Challenged Conduct. In fact, the only prices in the Output Market discussed by Dr. Singer—the prices of Zuffa pay-per-view (“PPV”) events—have not increased in real (*i.e.*, adjusted for inflation) terms.

48. To summarize: A finding of anticompetitive conduct requires showing that the alleged monopolist or monopsonist employed specific practices to enhance or preserve its market power, and that those practices harmed competition. My analyses show instead that the Challenged Conduct did not harm competition, nor did it cause members of the Class to suffer economic harm. Indeed, the evidence is that Class Members have benefitted from Zuffa’s success, and the Challenged Conduct is central to that success.

### III. THE UFC SUCCEEDED BY PROCOMPETITIVE MEANS

#### A. THE UFC BUILT AND GREW THE BUSINESS OF MMA, INCREASING CONSUMER CHOICE, AND CREATING A PRODUCT CONSUMERS VALUE

49. UFC is a prime example of the kind of “superior skill, foresight, and industry” that is the hallmark of vigorous competition. When Zuffa acquired UFC in 2001, MMA was a fringe sport.<sup>49</sup> There were few standard rules, no weight classes, and state athletic commissions would not sanction MMA bouts.<sup>50</sup> In 1996, Senator John McCain referred to MMA as “human cock-fighting” and called for states to ban MMA events.<sup>51</sup> Political and public pressure led 36 states to ban MMA.<sup>52</sup> In 1997, when Senator McCain became chairman of the Commerce Committee (which oversaw the cable industry), he put pressure on cable and pay-per-view providers to stop

---

<sup>49</sup> Deposition of Lorenzo J. Fertitta (March 23, 2017) [hereinafter FERTITTA TR.] at 147.

<sup>50</sup> Dave Meltzer, “The pitfalls that faced UFC before its television success,” *MMA Fighting* (November 16, 2013) available at <https://www.mmafighting.com/2013/11/16/5105738/the-pitfalls-that-faced-ufc-before-its-television-success>.

<sup>51</sup> David Plotz, “Fight Clubbed,” *Slate* (November 17, 1999) available at [http://www.slate.com/articles/briefing/articles/1999/11/fight\\_clubbed.html](http://www.slate.com/articles/briefing/articles/1999/11/fight_clubbed.html).

<sup>52</sup> Ron Borges, “It was the Ultimate save; Business plan by Fertittas and White took UFC from the brink to the heights” *Boston Herald* (August 26, 2010) available at [http://www.bostonherald.com/sports/other/ultimate\\_fighting/2010/08/business\\_plan\\_fertittas\\_and\\_white\\_took\\_ufc\\_brink\\_heights](http://www.bostonherald.com/sports/other/ultimate_fighting/2010/08/business_plan_fertittas_and_white_took_ufc_brink_heights).



## Highly Confidential Under Protective Order

airing MMA fights.<sup>53</sup> As a result, the potential number of PPV subscribers to UFC's events plummeted.<sup>54</sup>

50. In the midst of this anti-MMA sentiment and decreased opportunity, the original founders of UFC decided to sell the organization. Lorenzo and Frank Fertitta purchased the UFC in 2001 for \$2 million, but, according to Mr. L. Fertitta, purchased little more than an "idea," along with some intellectual property and contracts with several satellite providers.<sup>55</sup> The UFC was not profitable, and the Fertittas invested their own capital to ensure its continued operations.<sup>56</sup> The company struggled for several years after it was acquired by the Fertittas. In approximately 2004, after several years of failure with losses of almost \$40 million,<sup>57</sup> Mr. L. Fertitta initially decided that Zuffa would shut down or sell the UFC in an attempt to recoup some of the capital the Fertittas had invested in the company.<sup>58</sup> Ultimately, however, the Fertittas chose to continue to invest in the UFC rather than give up on the failing business.<sup>59</sup>

51. Following the acquisition of UFC, Zuffa expended significant resources in legitimizing MMA.<sup>60</sup> In addition to leveraging Lorenzo Fertitta's experience with state athletic commissions,<sup>61</sup> Zuffa created a department devoted to regulatory issues and hired additional

---

<sup>53</sup> Dave Meltzer, "The pitfalls that faced UFC before its television success," *MMA Fighting* (November 16, 2013) available at <https://www.mmafighting.com/2013/11/16/5105738/the-pitfalls-that-faced-ufc-before-its-television-success>.

<sup>54</sup> David Plotz, "Fight Clubbed," *Slate* (November 17, 1999) available at [http://www.slate.com/articles/briefing/articles/1999/11/fight\\_clubbed.html](http://www.slate.com/articles/briefing/articles/1999/11/fight_clubbed.html).

<sup>55</sup> FERTITTA TR. at 296.

<sup>56</sup> FERTITTA TR. at 296.

<sup>57</sup> Michael A. Hitt, R. Duane Ireland, Robert E. Hoskisson, *Strategic Management Cases: Competitiveness and Globalization* (10th Edition, 2013) at 360.

<sup>58</sup> FERTITTA TR. at 296. See also Ron Borges, "It was the Ultimate save; Business plan by Fertittas and White took UFC from the brink to the heights" *Boston Herald* (August 26, 2010) available at [http://www.bostonherald.com/sports/other/ultimate\\_fighting/2010/08/business\\_plan\\_fertittas\\_and\\_white\\_took\\_ufc\\_brink\\_heights](http://www.bostonherald.com/sports/other/ultimate_fighting/2010/08/business_plan_fertittas_and_white_took_ufc_brink_heights).

<sup>59</sup> FERTITTA TR. at 296-97.

<sup>60</sup> Andy Bull, "The Fight Game Reloaded: How MMA and UFC Conquered the World," *The Guardian* (March 4, 2016) available at <https://www.theguardian.com/sport/2016/mar/04/the-fight-game-reloaded-how-mma-conquered-world-ufc>.

<sup>61</sup> Lorenzo Fertitta was a commissioner on the Nevada State Athletic Commission for approximately four years. (FERTITTA TR. at 14.)

## Highly Confidential Under Protective Order

regulatory consultants.<sup>62</sup> UFC then became was a prime mover in creating a unified set of rules for the sport and in convincing state athletic commissions to sanction MMA.<sup>63</sup> New Jersey was the first to do so followed by Nevada.<sup>64</sup> Zuffa later hired Marc Ratner, the former Executive Director of the Nevada State Athletic Commission who had experience dealing with athletic commissions and was well-connected.<sup>65</sup> The UFC's investments in these and other executives who could navigate the regulatory processes led to MMA being sanctioned by state athletic commissions in all 50 states by 2016.<sup>66</sup> Much of this change in the regulatory landscape was the direct result of work that Zuffa did, over a 15-year period, in standardizing the sport under a uniform set of rules and weight classes and money Zuffa spent in educating regulators about the sport of MMA.<sup>67</sup>

52. Zuffa also worked to promote its athletes and events with consumers and raise the profile of MMA, even though at that time broadcasters were reluctant to take a meeting with the UFC, pay the UFC for broadcast rights, or risk losing advertisers by airing MMA related content.<sup>68</sup> Realizing that they needed broadcasting opportunities to increase the profile of the brand and MMA athletes, the Fertittas and Dana White proposed creating and producing an MMA reality show that would promote MMA athletes by highlighting their athletic skills and allowing

---

<sup>62</sup> Michael A. Hitt, R. Duane Ireland, Robert E. Hoskisson, *Strategic Management Cases: Competitiveness and Globalization* (10th Edition, 2013), Case 25.

<sup>63</sup> Andy Bull, "The Fight Game Reloaded: How MMA and UFC Conquered the World," *The Guardian* (March 4, 2016) available at <https://www.theguardian.com/sport/2016/mar/04/the-fight-game-reloaded-how-mma-conquered-world-ufc> ("[Fertitta] approached a few key athletic commissions – Nevada, Texas, Florida – and, Fertitta says, asked them: 'How can we create a set of rules that will address whatever issues you have?'").

<sup>64</sup> Adam Hill, "A Timeline of UFC Rules: From No-Holds-Barred to Highly Regulated," *Bleacher Report* (April 24, 2013) available at <http://bleacherreport.com/articles/1614213-a-timeline-of-ufc-rules-from-no-holds-barred-to-highly-regulated>.

<sup>65</sup> John Eligon, "A Boxing Regulator Changes Corners," *New York Times* (November 24, 2006) available at <http://www.nytimes.com/2006/11/24/sports/othersports/24fight.html>.

<sup>66</sup> Bryan Armen Graham, "New York ends ban and becomes 50th state to legalize mixed martial arts," *The Guardian* (March 22, 2016) available at <https://www.theguardian.com/sport/2016/mar/22/new-york-legalizes-mma-ufc>.

<sup>67</sup> Michael A. Hitt, R. Duane Ireland, Robert E. Hoskisson, *Strategic Management Cases: Competitiveness and Globalization* (10th Edition, 2013), Case 25.

<sup>68</sup> FERTITTA TR. at 297.

## Highly Confidential Under Protective Order

viewers to get to know the athletes on a personal level.<sup>69</sup> Although no cable network would buy the show, Spike TV offered to broadcast it if Zuffa paid the entire costs of production—\$10 million—which Zuffa did.<sup>70</sup> The resulting show, *The Ultimate Fighter*, significantly increased consumer demand for UFC events.<sup>71</sup>

53. In addition to changing public, legislative, and broadcasters' perception of the sport, the UFC worked to promote MMA athletes and grow both the athletes' brands and the UFC brand.<sup>72</sup> For example, the UFC prominently features its athletes in advertising across a wide range of channels, including television, print, and internet sites, and in a wide variety of consumer products, including video games and action figures.<sup>73</sup>

54. Additionally, UFC partnered with advertising agency PETROL to create visually and emotionally appealing marketing that focus on the athletes' backstories to get fans invested in the athletes themselves.<sup>74</sup> In another innovation, UFC also started broadcasting the first fights of an

---

<sup>69</sup> Ron Borges, "It was the Ultimate save; Business plan by Fertittas and White took UFC from the brink to the heights" *Boston Herald* (August 26, 2010) available at [http://www.bostonherald.com/sports/other/ultimate\\_fighting/2010/08/business\\_plan\\_fertittas\\_and\\_white\\_took\\_ufc\\_brink\\_heights](http://www.bostonherald.com/sports/other/ultimate_fighting/2010/08/business_plan_fertittas_and_white_took_ufc_brink_heights).

<sup>70</sup> Ron Borges, "It was the Ultimate save; Business plan by Fertittas and White took UFC from the brink to the heights" *Boston Herald* (August 26, 2010) available at [http://www.bostonherald.com/sports/other/ultimate\\_fighting/2010/08/business\\_plan\\_fertittas\\_and\\_white\\_took\\_ufc\\_brink\\_heights](http://www.bostonherald.com/sports/other/ultimate_fighting/2010/08/business_plan_fertittas_and_white_took_ufc_brink_heights). See also Deposition of Ike Lawrence Epstein (May 26, 2017) [hereinafter EPSTEIN TR.] at 200-202; Stuart Miller, "Defending the Belt; UFC hits 100 and Keeps Swinging," *Mulitchannel News* (July 6, 2009) available at <http://www.multichannel.com/news/cable-operators/defending-belt/329689>.

<sup>71</sup> Andy Bull, "The Fight Game Reloaded: How MMA and UFC Conquered the World," *The Guardian* (March 4, 2016) available at <https://www.theguardian.com/sport/2016/mar/04/the-fight-game-reloaded-how-mma-conquered-world-ufc> (In the two years following the first season of *The Ultimate Fighter*, "UFC had a 1,258% increase in revenue, including a 1,700% increase in PPV sales.")

<sup>72</sup> Jeff Beer, "How UFC is Taking the World's Oldest Sport Into the Future of Media," *Fast Company* (July 7, 2016) available at <https://www.fastcompany.com/3061603/how-ufc-is-taking-the-worlds-oldest-sport-into-the-future-of-media> ("The company has essentially taken a page from the WWE in hyping the personalities and talents of its individual fighters with show business bravado under the overall banner of the brand.")

<sup>73</sup> Stuart Miller, "Defending the Belt; UFC hits 100 and Keeps Swinging," *Mulitchannel News* (July 6, 2009), available at <http://www.multichannel.com/news/cable-operators/defending-belt/329689>

<sup>74</sup> Kristi Dosh, "The Evolution of UFC Event Marketing: From the Beginning to UFC 200," *Forbes* (July 9, 2016), available at <https://www.forbes.com/sites/kristidosh/2016/07/09/the-evolution-of-ufc-event-marketing-from-the-beginning-to-ufc-200/>.

## Highly Confidential Under Protective Order

event on Facebook in order to gain fans and get a broader audience for less-known athletes.<sup>75</sup> The UFC's promotion of its athletes also included implementing rules that were designed to enhance athletes' safety and further legitimize the sport. For example, the UFC implemented the UFC Anti-Doping Program, which subjects all athletes who compete in UFC-promoted events to year-round, unannounced drug testing. As part of that program, the UFC contracted the United States Anti-Doping Association to act as an independent administrator of the policy.<sup>76</sup> Mr. White and the Fertittas also wanted to turn the UFC into a popular form of entertainment, and not just a sport.<sup>77</sup> In order to do so, their events had high end production value and a unique look and feel.<sup>78</sup>

55. Dana White was also central to Zuffa's promotional efforts. Mr. White is arguably celebrity in his own right, and his persona appealed to the audience the UFC hoped to attract.<sup>79</sup> Mr. White uses social media to connect to fans and generate interest in UFC events, and today has over 4.8 million Twitter followers.<sup>80</sup> Mr. White worked to change the way MMA was marketed, with a new marketing campaign ("As Real As It Gets") that differentiated MMA from the staged and choreographed professional wrestling events with which it competed.<sup>81</sup> White

---

<sup>75</sup> FERTITTA TR. at 194-195. See also Gregory Fernstein, "UFC and Its Gang of 4.6 Million Facebook Friends Body Slam Sports Broadcasting," *Fast Company* (February 4, 2011) available at <https://www.fastcompany.com/1723897/ufc-and-its-gang-46-million-facebook-friends-body-slam-sports-broadcasting>.

<sup>76</sup> USADA, "About USADA's Role in the UFC Anti-Doping Program," available at <https://ufc.usada.org/>; Andy Bull, "The Fight Game Reloaded: How MMA and UFC Conquered the World," *The Guardian* (March 4, 2016) available at <https://www.theguardian.com/sport/2016/mar/04/the-fight-game-reloaded-how-mma-conquered-world-ufc> ("The UFC's solution was to hire the best anti-doping expert it could find, Jeff Novitzky. He has joined the UFC from a 22-year career in federal law enforcement, the past 12 of them spent in anti-doping.")

<sup>77</sup> FERTITTA TR. at 172; Jeff Beer, "How UFC is Taking the World's Oldest Sport Into the Future of Media," *Fast Company* (July 7, 2016) available at <https://www.fastcompany.com/3061603/how-ufc-is-taking-the-worlds-oldest-sport-into-the-future-of-media>.

<sup>78</sup> FERTITTA TR. at 240.

<sup>79</sup> Greg Fernstein, "How Dana White Built a UFC Empire With Social Media," *Mashable* (June 8, 2010) available at [http://mashable.com/2010/06/08/dana-white-ufc-social-media/#C\\_hk4zdPEgqH](http://mashable.com/2010/06/08/dana-white-ufc-social-media/#C_hk4zdPEgqH); FERTITTA TR. at 261-62.

<sup>80</sup> Greg Fernstein, "How Dana White Built a UFC Empire With Social Media," *Mashable* (June 8, 2010) available at [http://mashable.com/2010/06/08/dana-white-ufc-social-media/#C\\_hk4zdPEgqH](http://mashable.com/2010/06/08/dana-white-ufc-social-media/#C_hk4zdPEgqH). See also <https://twitter.com/danawhite>.

<sup>81</sup> Sean Hyson, "Dana White, the man, the sport, and the money," *Men's Fitness* available at <http://www.mensfitness.com/sports/mma/dana-white>.

Highly Confidential Under Protective Order

also pushed to feature the UFC in mainstream media, buying advertising in Maxim and Sports Illustrated and arranging for athletes to be featured on television programs such as Fox's *The Best Damn Sports Show Period*.<sup>82</sup>

85

57. In summary, in the years since Zuffa acquired the UFC, it helped to the sport of MMA into one of the fastest-growing sport in the world. These efforts by Zuffa, and Zuffa's skill in providing consumers with an attractive MMA product, grew the market for MMA, to the benefit of athletes, consumers, and competing promoters.<sup>86</sup>

**B. THE UFC HAS PRO-COMPETITIVELY INCREASED ATHLETES' PAY, OUTPUT, AND CONSUMER CHOICE**

[REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]

<sup>82</sup> Sean Hyson, "Dana White, the man, the sport, and the money," *Men's Fitness* available at <http://www.mensfitness.com/sports/mma/dana-white>.

<sup>83</sup> Deposition of Brent Richard (July 20, 2017) [hereinafter RICHARD TR.] at 229-30; Meltzer, “The Pitfalls That Faced UFC Before Its Television Success” (The UFC’s former owner explained: “The other piece of the puzzle we didn’t have was Dana.”)

<sup>84</sup> RICHARD TR. at 232; WME ZUFFA 00001150 at p. 14.

<sup>85</sup> ZFL-1057314-53 at 14.

<sup>86</sup> Declaration of Rodney D. Fort, Ph.D. Submitted to the Federal Trade Commission on Behalf of Zuffa, LLC (December 1, 2011) [hereinafter FORT REPORT] at ¶¶ 39-41.

<sup>87</sup> Deposition of Denitza Batchvarova (January 25, 2017) [hereinafter BATCHVAROVA TR.] at 65; Deposition of Michael P. Mersch (July 14, 2017) [hereinafter MERSCH TR.] at 476-77.

## Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]<sup>89</sup>

59. As I discussed in Section III.A, Zuffa was the leader in laying the regulatory groundwork for acceptance of MMA as something other than a fringe sport. Without that work, and without the legitimization efforts Zuffa undertook, output would likely have been lower. That is, Zuffa was the leader in building the infrastructure and consumer acceptance needed before MMA could thrive. Without this work, neither athletes nor other MMA promoters could participate in MMA to the extent that they do today.

60. In addition to increasing overall output, Zuffa has increased the variety of MMA events and athletes available to U.S. consumers by bringing live and broadcast MMA events to all 50 states, diversifying the sport by bringing in athletes from all over the world to compete with one another under the UFC banner, and expanding its events roster to include between 13 and 16 international events (all broadcast in the U.S. and internationally) every year. One of Zuffa's key business initiatives was an expansion of its events to include international offerings and for developing new markets for MMA outside of the United States.<sup>90</sup> That expansion not only brought the UFC's events to other countries, but also brought such televised events to the United States.<sup>91</sup> As part of its expansion to new international markets, the UFC has invested by scouting international talent and negotiating international broadcast agreements.<sup>92</sup> This work, which

---

<sup>88</sup> FERTITTA TR. at 219-20.

<sup>89</sup> EPSTEIN TR. at 98-99; FERTITTA TR. at 188; Deposition of Kirk Hendrick (July 17, 2017) [hereinafter HENDRICK TR.] at 162-64.

<sup>90</sup> Levi Nile, "UFC and Their Plans for Global Expansion," *Bleacher Report* (January 16, 2014) available at <http://bleacherreport.com/articles/1926281-ufc-and-their-plans-for-global-expansion>.

<sup>91</sup> Allan Snel "Export product: UFC dispatching fight shows to global venues," *Las Vegas Review Journal* (January 12, 2104) available at <https://www.reviewjournal.com/business/export-product-ufc-dispatching-fight-shows-to-global-venues/>.

<sup>92</sup> Zane Simon, "UFC's Brazilian TV deals are a booming business," *Bloody Elbow* (October 31, 2013) available at <https://www.bloodyelbow.com/2013/10/31/5051454/ufc-brazilian-tv-deals-booming-business-millions-mma-news>; Jesse Holland, "UFC International expansion plans include Macau in 2012, Singapore in 2013," *Bloody Elbow* (November 4, 2011) available at <https://www.bloodyelbow.com/2013/10/31/5051454/ufc-brazilian-tv-deals-booming-business-millions-mma-news>.

## Highly Confidential Under Protective Order

required the UFC to hire employees and open offices all over the world,<sup>93</sup> created additional MMA events for consumers as well as providing expanded opportunities and experiences for athletes.

**C. THE UFC SUCCEEDED BY BUILDING AND PROMOTING TALENT**

61. Plaintiff's foreclosure theory presumes that competing MMA promoters can only be successful by enticing UFC athletes to switch to them. However, the history of MMA, both for UFC and for competing promoters, shows that identifying, developing, and promoting talent is the path to success. A key to being able to run a successful promotion is to bring in promising athletes, develop them, enter them into a series of bouts to identify successful athletes, and promote those athletes to the public—all strategies where UFC has proven to be very successful.<sup>94</sup> All promoters have equal access to up-and-coming athletes and to sign them before they become so-called headliners. Part of Zuffa's success has been the identification of talent early on in MMA athletes' careers and to help them on their rise to stardom.

62. As UFC President Dana White described:

There's tons of fighters every single weekend. This weekend, there's fights happening all over the world. There's MMA promoters literally all over the world. And there are fights happening every weekend, this week, next weekend, last weekend. These fights are happening. Then what you do is you go out, you know, there's a team at the UFC, there's three of us, who go out, and we look at people.

You know, what's crazy? Think about this. Four years ago, Conor McGregor was available to everybody. Bellator, ONE FC, UFC, everybody out there. Do you know who went out – he was – he was 7 and 2. Okay? Guy's record was 7 and 2. There's a zillion of them, right? I went and got Conor McGregor. I saw him, I liked his personality, and I turned him into a star, one of the biggest stars on earth right now. Bellator could have done that, ONE FC could have done it, they all could have done it. Four years ago, he was available to everybody.<sup>95</sup>

63. Zuffa has also excelled at promoting up-and-coming talent and making them into household names. Because the number of MMA athletes who may be developed into "stars" is

---

<sup>93</sup> Levi Nile, "UFC and Their Plans for Global Expansion," *Bleacher Report* (January 16, 2014) available at <http://bleacherreport.com/articles/1926281-ufc-and-their-plans-for-global-expansion>.

<sup>94</sup> Deposition of Joseph Silva (June 7, 2017) [hereinafter J. SILVA TR.] at 61-62; FERTITTA TR. at 223-25, 270-71.

<sup>95</sup> Deposition of Dana F. White (August 9, 2017) [hereinafter WHITE TR.] at 332-33.



## Highly Confidential Under Protective Order

limited, successful MMA promoters must be able to identify and develop these potential stars. As Mr. White explained “[I]t’s not like, you know, stars are just out there popping up everywhere. You have to be able to know who you think is talented, who you think could possibly be, you know, a world champion or a big fighter some day, then you turn these people into stars.”<sup>96</sup> Zuffa’s success at identifying MMA athletes early on in their careers and promoting them successfully into household names has been a cornerstone of its long-term value and success.

#### **IV. THE UFC FACES SIGNIFICANT COMPETITION**

##### **A. LOW BARRIERS TO ENTRY MEAN THAT THE UFC FACES COMPETITION**

64. New and existing MMA promoters have ready access to inputs and facilities needed to stage MMA events, including access to MMA athletes, venues, and sponsors. These promoters have access to a large number of MMA athletes, and they can produce and distribute their events through broadcasters and the internet (in addition to selling tickets to view the event in person). Given the rising popularity of the sport, many sponsors are likely interested in associating with MMA promoters, and there are myriad venues in which to stage live MMA events. In addition, as discussed above, Zuffa has lowered barriers to entry by assisting in the sanctioning of MMA by state athletic commissions and increasing consumer acceptance of the sport. Zuffa has effectively created the MMA market platform in which promoters and athletes compete. Partly as a result of Zuffa’s efforts, barriers to entry in the market for MMA promotion are low,<sup>97</sup> and Zuffa has faced significant competition from rival MMA promoters in the U.S. and around the world.

65. As an initial matter, there is a large potential supply of MMA athletes that a new promoter could employ. In addition to the athletes identified by Dr. Singer in his Input Market definitions, MMA athletes have come from, among other places, collegiate or Olympic wrestling

---

<sup>96</sup> WHITE TR. at 331.

<sup>97</sup> FERTITTA TR. at 122-23; 30(b)(6) Deposition of Zuffa, LLC by Ike Lawrence Epstein (December 2, 2016) [hereinafter EPSTEIN ACQUISITIONS TR.] at 120-22.



## Highly Confidential Under Protective Order

or boxing programs, martial art academies, the military, and other professional sports.<sup>98</sup> Production and distribution costs are relatively low, as evidenced by the hundreds of MMA promotions referenced by Dr. Singer and the large number with television distribution deals.<sup>99</sup> Broadcasters have also demonstrated a willingness to switch from carrying matches from one MMA promoter to another, including Spike TV (now owned by Viacom, Bellator's parent organization<sup>100</sup>) switching from showing the UFC to showing Bellator in 2013.<sup>101</sup> The enormous growth in streaming as an alternative to broadcast TV makes it increasingly likely that successful MMA promoters can bypass broadcast TV and build an audience directly over the internet.<sup>102</sup> There are few sunk costs invested by incumbent firms, there are no technical barriers such as intellectual property rights or research and development costs necessary to entry, and there are many potential venues and sponsors available to potential entrants.<sup>103</sup>

[REDACTED]

<sup>98</sup> FORT REPORT at ¶ 24; Declaration of Andrew R. Dick, Ph.D., Submitted to the Federal Trade Commission on Behalf of Zuffa, LLC (December 1, 2011) [hereinafter DICK REPORT] at ¶ 47.

<sup>99</sup> SINGER REPORT at ¶¶ 104, 111; DICK REPORT at Exhibit 14.

<sup>100</sup> Viacom, "Spike," available at <http://www.viacom.com/brands/pages/spike.aspx>

<sup>101</sup> DICK REPORT at ¶¶ 51-52.

<sup>102</sup> FERTITTA TR. at 129.

<sup>103</sup> FORT REPORT at ¶ 26; DICK REPORT at ¶ 49.

<sup>104</sup> 30(b)(6) Deposition of Zuffa, LLC by Peter Dropick (December 1, 2016) [hereinafter DROPICK 30(B)(6) TR.], Exhibit 51, Tab A at 2-6.

<sup>105</sup> DROPICK 30(B)(6) TR. at 22, 24-25.

<sup>106</sup> DROPICK 30(B)(6) TR., Exhibit 51, Tab 1.

## Highly Confidential Under Protective Order

[REDACTED]

67. The barriers to obtaining sponsors are also low. There are thousands of sponsors available to MMA promoters, as evidenced by the myriad sponsors on MMA promoters' websites and at their events. Many of Zuffa's competitors are sponsored by large corporations. (I also note that Zuffa's work to transform MMA from a fringe to mainstream sport may have aided competing MMA promotions in securing these sponsors.) Bellator lists Spike, Monster Energy Drinks, Dave & Busters, Miller Lite, and Blackheart Premium Spiced Rum as sponsors on its website.<sup>110</sup> The Professional Fighters League, formerly WSOF, features Alienware, Autoshipper.com, Fite.tv, and other sponsors on its website.<sup>111</sup> ONE Championship notes on its website that it "has

---

<sup>107</sup> The UFC scheduled multiple events at two venues in Las Vegas. Because the UFC is based in Las Vegas, it is less expensive for Zuffa to hold events in that city. (See Deposition of Peter Dropick (May 4, 2017) at 196.)

<sup>108</sup> Calculations based on Sherdog data in Singer Backup. To the extent that venues closed or venue names changed, this number may be an over-estimate.

<sup>109</sup> To the extent that venue names changed, this may be an over-estimate.

<sup>110</sup> Bellator MMA, "About Us" available at <http://bellator.spike.com/about>.

<sup>111</sup> Professional Fighters League available at <http://www.professionalfightersleague.com/>.

## Highly Confidential Under Protective Order

a coveted roster of blue-chip Fortune 500 sponsors, including the likes of Disney, Marvel, LG, Sony, Facebook, Haier, Kawasaki, L'Oréal, Casio, Bayer, and more.”<sup>112</sup> Certain sponsors like Alienware and Monster Energy also sponsor Zuffa in addition to competing MMA organizations.<sup>113</sup>

[REDACTED]

**B. THE UFC HAS AND WILL CONTINUE TO FACE SIGNIFICANT COMPETITION**

69. Zuffa faces significant competition from other MMA promoters. While Zuffa is a successful promoter of live MMA events, Zuffa currently competes with other promoters in both Input and Output Markets. Zuffa has faced extremely well-funded competition in Bellator, which is backed by Viacom and broadcast on Spike, a network that previously aired UFC events, as

---

<sup>112</sup> ONE Championship, “About One” *available at* <https://onefc.com/about-one/>.

<sup>113</sup> 30(b)(6) Deposition of Zuffa, LLC by Michael Mossholder (November 30, 2016) [hereinafter MOSSHOLDER 30(B)(6) TR.] at 80-81.

[REDACTED]

## Highly Confidential Under Protective Order

well as competition from already-popular and fast-growing MMA promoters like ONE Championship, the Professional Fighters League, and Absolute Championship Berkut.

70. Bellator is a prime example of how new promoters can enter the market and rapidly develop into a significant competitor. Bellator started promoting fights in 2009 (well after UFC had been established in the marketplace) after signing a deal for a series of MMA matches on ESPN Deportes.<sup>115</sup> Following on that success, Bellator was acquired by Viacom in 2011, and now all of its matches are broadcast on Viacom's Spike TV network, with millions of fans watching Bellator's recent main events on cable TV. Bellator events have repeatedly attracted more viewers than UFC events and have reached up to 2.7 million viewers.<sup>116</sup> In addition, other promoters have recognized that Bellator has a significant amount of monetary resources with which to compete.<sup>117</sup>

71. Among other competitors, the Professional Fighters League began as the World Series of Fighting in 2012 (during the alleged Class Period); the promotion changed its name in April 2017. The Professional Fighters League has a broadcast agreement with NBC Sports, a cable network, and with other networks around the world. A recent event drew nearly a million viewers in the U.S.<sup>118</sup> Plaintiff Jon Fitch signed a contract with the Professional Fighters

---

<sup>115</sup> Steve Barry, "Bellator Fighting Championships Announce Agreement with ESPN Deportes," *MMA Convert*, (November 19, 2008) available at <http://www.mmaconvert.com/2008/11/19/bellator-fighting-championships-announces-agreement-with-espn-deportes/>.

<sup>116</sup> Dave Meltzer, "Bellator tops UFC in weekend ratings by 96,000 viewers," *MMA Fighting* (September 26, 2017) available at <https://www.mmafighting.com/2017/9/26/16371222/bellator-tops-ufc-in-weekend-ratings-by-96000-viewers>; Mookie Alexander, "Ratings: Bellator 149 peaked at 2.7 million viewers, UFC fails to average 1 million," *Bloody Elbow* (February 23, 2016) available at <https://www.bloodyelbow.com/2016/2/23/11099616/ratings-bellator-149-peaked-at-2-7-million-viewers-ufc-fails-to-average-1-million-mma-news>.

<sup>117</sup> Deposition of Jeffrey Aronson (April 25, 2017) at 29-30 ("I think the issue is that you have companies like Bellator, who are backed by Viacom, who, you know, have more money than UFC. I just think UFC works incredibly smart and markets incredibly well."). Mr. Aronson is the CEO of Titan FC, an MMA promotion.

<sup>118</sup> Jason Cruz, "Updated: WSOF 34 draws 951,000 viewers, prelims draw 71,000 on NBCSN," *Payout* (January 4, 2017) available at <http://mmapayout.com/2017/01/wsof-34-draws-941000-viewers-prelims-draw-71000-on-nbcfn/>.

## Highly Confidential Under Protective Order

League, then known as the World Series of Fighting, and won the welterweight title as part of the promotion.<sup>119</sup>

72. As an example of the speed with which new MMA promoters can get established in the marketplace, Russian promoter Absolute Championship Berkut promoted its first event in October 2012, six events in 2013, 22 events in 2016, and is currently on track to promote 27 events in 2017.<sup>120</sup>

73. AXS TV, a cable network co-owned by Mark Cuban, routinely broadcasts MMA events. The network, which formerly was called HDNet, once used the slogan, “The Home of MMA,” and promoted its own MMA events under the HDNet name.<sup>121</sup> Now, however, the network takes advantage of the wide availability of competing MMA promoters, broadcasting events from several of them, rather than promoting its own events, and claims to present more live MMA events than any other television network.<sup>122</sup>

74. All of these promoters and others around the world not only compete against UFC in the downstream market, but also compete vigorously for MMA athletes: both new and up and coming talent such as Abubakar Nurmagomedov (Professional Fighters League), Petr Yan (Absolute Championship Berkut), Mateusz Gamrot (KSW), and Angela Lee (ONE Championship).<sup>123</sup> For established MMA athletes in the free agent market, Bellator, the Professional Fighters League, ONE Championship, and others have on many occasions signed highly ranked athletes that previously fought in the UFC. Among them is Plaintiff Jon Fitch, who fought in the UFC from 2005 to 2013, then signed with WSOF and is now its welterweight

---

<sup>119</sup> “PFL: Daytona Highlights: Jon Fitch gets first finish in more than 10 years,” *MMA Junkie* (July 1, 2017) available at <http://mmajunkie.com/2017/07/pfl-daytona-highlights-video-jon-fitch-submission-brian-foster>.

<sup>120</sup> Sherdog.com, “Recent Events, Absolute Championship Berkut” available at <http://www.sherdog.com/organizations/Absolute-Championship-Berkut-8185>.

<sup>121</sup> James Iannotti, “HDNet reaches television agreements with DREAM and K-1,” *SBNation* (November 4, 2008) available at <https://www.mmamania.com/2008/11/24/hdnet-reaches-television-agreements-with-dream-and-k-1>.

<sup>122</sup> AXS TV Fights available at <http://www.axs.tv/programs/fights/>.

<sup>123</sup> Patrick Wyman, *The Top 25 MMA Prospects for 2017, Part 2*, Bleacher Report (January 30, 2017) available at <http://bleacherreport.com/articles/2687394-the-top-25-mma-prospects-for-2017-part-2>.

## Highly Confidential Under Protective Order

champion. Similarly, Plaintiff Brandon Vera competed in the UFC from 2005 through 2014, and then signed with ONE Championship, where he is now the heavyweight champion.

75. Bellator has signed a number of athletes who formerly competed for the UFC, including Rory MacDonald, Benson Henderson, Matt Mitrione, Phil Davis, Lorenz Larkin, Gegard Mousasi, Josh Thomson, and Rampage Jackson. Bellator also competes with UFC and other promoters to sign promising new athletes. Among the top prospects signed by Bellator are Aaron Pico, Ed Ruth, and Tyrell Fortune. In addition, Bellator has developed its own stars, including Muhammed Lawal, Michael Chandler, and Michael Page.<sup>124</sup>

76. [REDACTED]

---

<sup>124</sup> Sherdog.com, “Muhammed Lawal” *available at* <http://www.sherdog.com/fighter/Muhammed-Lawal-29858>; Sherdog.com, “Michael Chandler” *available at* <http://www.sherdog.com/fighter/Michael-Chandler-50829>; Sherdog.com, “Michael Page” *available at* <http://www.sherdog.com/fighter/Michael-Page-91937>.

<sup>125</sup> Deposition of Jeremy Lappen (February 28, 2017) at 138.

<sup>126</sup> Deposition of Shannon Knapp (April 11, 2017) [hereinafter KNAPP TR.] at 71, 220-21.

<sup>127</sup> C. SILVA TR. at 204.

<sup>128</sup> [REDACTED]

<sup>129</sup> Deposition of Joseph Silva (June 7, 2017) [hereinafter J. SILVA TR.] at 49 (naming Pride, Bellator, Extreme Fighting, World Combat Championships, Martial Arts Reality Superfighting, Affliction, and Strikeforce as competitors who have outbid the UFC for name athletes).

## Highly Confidential Under Protective Order

77. Bellator, ONE, and the Professional Fighters League, which Dr. Singer dismiss as competitively insignificant, are more financially stable, well-established, and put on more events than the promotions Zuffa acquired. Bellator is a major and well-financed competitor that has already attracted up to 2.7 million viewers for its events (beating the UFC's peak viewership by 1.5 million viewers),<sup>130</sup> and, as explained above, has signed well-recognized former UFC athletes as well as developed high-level talent from within. In addition, as explained above, ONE and Professional Fighters League have had success recruiting and signing talented athletes.

78. In Exhibit 3, I compare the annual number of events for the promoters acquired by Zuffa (at their pre-acquisition peaks) versus the number of events held in 2016 for several of Zuffa's current competitors. Of the acquired promoters, Strikeforce held the most events at its peak, with 15 events in 2010, while Pride peaked at 11 events in 2002, WEC at 7 events in 2006, and WFA at 2 events in 2002. In contrast, Absolute Championship Berkut, Bellator, and ONE all had more events in 2016 than Strikeforce did at its peak, with 22, 22, and 16 events, respectively. Another promoter, Professional Fighters League, held 8 events in 2016, more than both WEC and WFA at their peaks. Finally, as an example of a current competitor's large viewership and potential for growth, ONE has been able to attract a significant number of viewers—which the promoter touted as “exponential growth” from 2014 to 2017 and a “1,000 times increase” in the number of video viewers—and reportedly has a significant presence on social media.<sup>131</sup>

[REDACTED]

<sup>130</sup> Mookie Alexander, “Ratings: Bellator 149 peaked at 2.7 million viewers, UFC fails to average 1 million,” *Bloody Elbow* (February 23, 2016) available at <https://www.bloodyelbow.com/2016/2/23/11099616/ratings-bellator-149-peaked-at-2-7-million-viewers-ufc-fails-to-average-1-million-mma-news>.

<sup>131</sup> Steve Feiner, “ONE Championship attracts massive TV ratings with recent blockbuster events,” *Huffington Post* (May 11, 2017) available at [https://www.huffingtonpost.com/entry/one-championship-attracts-massive-tv-ratings-with-recent\\_us\\_5914fb56e4b02d6199b2edd8](https://www.huffingtonpost.com/entry/one-championship-attracts-massive-tv-ratings-with-recent_us_5914fb56e4b02d6199b2edd8); ONE Championship, “ONE Championship Television Ratings Show Incredible Growth in Last Three Years” (April 26, 2017) available at <https://onefc.com/articles/one-championship-television-ratings-show-incredible-growth-in-last-three-years/>.

Highly Confidential Under Protective Order

[REDACTED]

**V. ZUFFA'S CONTRACTUAL PROVISIONS ARE PROCOMPETITIVE**

80. [REDACTED]

**A. COMPETING MMA PROMOTERS USE SIMILAR CONTRACT PROVISIONS**

81. [REDACTED]

---

<sup>132</sup> EPSTEIN ACQUISITIONS TR. at 88-90; FERTITTA TR. at 82-87.

<sup>133</sup> FERTITTA TR. at 266-67; EPSTEIN ACQUISITIONS TR. at 150-51; Deposition of Thomas J. Atencio (February 9, 2017) [hereinafter ATENCIO TR.] at 116.

<sup>134</sup> ZFL-1212232-59 at 47, citing ZUF-00102396, ZUF-00104944, DICK REPORT at Exhibit 26; EPSTEIN ACQUISITIONS TR. at 185.

<sup>135</sup> SINGER REPORT at ¶ 64.



Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

84. [REDACTED]

---

<sup>136</sup> The sample of Bellator agreements includes agreements associated with 20 percent of Bellator athletes who were active between 2010 and June 2017. For this set of athletes, the sample includes all agreements associated with these athletes from 2010 to June 2017. (Order re Motion to Quash, *Cung Le, et al., v. Zuffa, LLC d/b/a Ultimate Fighting Championship and UFC*, Case No. 2:15-cv-01045-RFB-PAL (D.Nev.) (June 13, 2017).) In each of the agreements in this sample, the name of the athlete and the dates associated with the agreement have been redacted. In my analysis, I follow Dr. Singer's approach and include only agreements that have been signed by both parties. I assume that a signature is in place when the signature block is redacted.

<sup>137</sup> [REDACTED]

[REDACTED]

## Highly Confidential Under Protective Order

**B. EXCLUSIVITY AND MULTI-BOUT CONTRACTS ASSIST IN PROTECTING PROMOTERS' INVESTMENTS AND BUILDING A BUSINESS**

85. In the MMA marketplace, many aspects of the contracting structure between promoters and athletes are best understood as a solution to a ubiquitous free riding problem.

86. Generally speaking, free riding can arise when two parties are engaged in a repeated economic relationship. The success of that relationship depends on one or both parties making investments that increase the value of collaboration. But in some cases, one party may be able to capture the investments of its partner by switching to another partner—the capital resulting from the investments are not specific to the original parties. This ability to free ride on the first partner's investments discourages that firm from making investments in the first place.<sup>139</sup> For example, an insurance company that sells through independent agents can increase demand for its products by advertising. However, once potential customers respond to the advertising by contacting the independent agent, the agent may have an incentive to steer customers to other insurers that do not spend as much on advertising, and therefore can offer more attractive pricing to the customer and to the agent.<sup>140</sup> To prevent such free riding, insurers that invest heavily in advertising may use exclusive agents rather than independent agents representing multiple insurers, and may restrict the ability of agents to take their client list with them if they leave to represent another insurer. Otherwise, the insurer would not generate as much return from its advertising and market development, and would have less incentive to promote its products.

87. Both athletes and promoters make considerable investments that increase the value of the product offered to the public: athletes through their training, and promoters through promoting MMA events and athletes. However, there is an important difference between these investments. Investments in training borne by the athletes themselves are not subject to free riding because training is embodied in the individual athlete: when skilled athletes switch promoters, their embodied skills go with them to the new promoter. The original promoter cannot transfer those skills to a new athlete, so the athlete retains the ability to collect the returns on his own training investments. In contrast, a promoter's investments in an athlete increase the general

---

<sup>139</sup> See Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization* (2005) at Chapter 12, p. 414.

<sup>140</sup> Howard P. Marvel, "Exclusive Dealing," *The Journal of Law and Economics*, vol. 25 (April 1982).

## Highly Confidential Under Protective Order

marketability and publicity of that athlete, which are embodied in the athlete's MMA reputation or identity. If an athlete switches promoters, the investments made by the original promoter continue to make the athlete more marketable and valuable with the new promoter. Absent contractual restrictions or other means of compensating the original promoter, a competing promoter can free ride on the investments made by the original promoter by hiring the established athlete. With no limitations on switching among promoters, this free riding would reduce the investments made by promoters in MMA events, and decrease the value of MMA events to consumers, athletes, and promoters.

[REDACTED]

[REDACTED]

---

<sup>141</sup> SINGER REPORT at ¶ 21.

<sup>142</sup> SINGER REPORT at ¶ 71; SINGER REPORT at n. 60.

<sup>143</sup> SINGER REPORT at ¶ 74.

90. One of the key developments in economic theory in the last century was the recognition that transaction costs can severely limit the gains from trade realizable through arm's-length transactions. In the presence of such costs, organizational forms and contracts are developed to facilitate trade, producing more efficient market outcomes.<sup>145</sup> This section of my report examines the substantial transaction costs associated with setting up and promoting interest in MMA

<sup>145</sup> The list of Nobel laureates in economics demonstrates the fundamental role of transaction costs in shaping economic theory. At least four laureates, Ronald Coase, Oliver Williamson, Oliver Hart and Bengt Holmstrom, were specifically commended for their contributions to understanding how transaction costs shape economic institutions, and transaction costs play a key role in the cited contributions of other laureates, including Douglass North and Elinor Ostrom. ([https://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/1991/press.html](https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1991/press.html);  
[https://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/1993/press.html](https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1993/press.html);  
[https://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/2009/advanced-economicsciences2009.pdf](https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2009/advanced-economicsciences2009.pdf);  
[https://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/2016/holmstrom-facts.html](https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2016/holmstrom-facts.html);  
[https://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/2016/advanced-economicsciences2016.pdf](https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2016/advanced-economicsciences2016.pdf))

## Highly Confidential Under Protective Order

matches, and the implications of those transaction costs on the MMA marketplace, particularly the form of MMA-producing firms and the types of contracts those firms use.

91. In MMA, one role of a promoting firm, such as Zuffa, is in organizing matches between athletes. While, in principle, a promoter representing one athlete could negotiate a match against an athlete represented by a second promoter in a one-off transaction, in practice, the payoffs for both athletes and consumers in creating optimal bouts complicate the negotiations, making them impractical. Dr. Singer gives an example of these misaligned incentives based on the importance to athletes of matches with higher-ranked athletes, which allow them an opportunity to move up in the rankings. In order for one athlete to be matched with a higher-ranked athlete, the higher-ranked athlete has to agree to a match with the lower-ranked athlete. As discussed by Dr. Singer, that can be a lose-lose proposition for the higher ranked athlete—winning the match can actually be harmful, and losing is definitely harmful—particularly if the opponent is talented but less well-known.<sup>146</sup> While boxing has independent sanctioning bodies that can play a role, however imperfect, in negotiating matches between athletes,<sup>147</sup> MMA does not have independent sanctioning organizations.<sup>148</sup> Thus, there is no independent arbiter in MMA that can resolve the disparate incentives among different athletes for subsequent fights and ensure that beneficial matches will take place.

92. The MMA marketplace resolves the inherent difficulties involved in arranging and promoting matches by vesting match-creating authority in a promoting firm, so the firm determines the matches for its contracted athletes.<sup>149</sup> The contractual authority to arrange matches ensures that the promoter can pair opponents that will generate the most fan interest, promote its events, and drive revenue, to the benefit of consumers, the promoter, and its athletes. The promoter, by taking into consideration its interests and those of athletes when choosing

---

<sup>146</sup> SINGER REPORT at ¶ 80.

<sup>147</sup> Expert Report of Andrew Zimbalist (*Cung Le, et al., v. Zuffa, LLC d/b/a Ultimate Fighting Championship and UFC*) Case No. 2:15-cv-01045-RFB-PAL (D.Nev.) (August 30, 2017) [hereinafter ZIMBALIST REPORT] at ¶ 92. As noted in that report, boxing sanctioning organizations can intervene when promoters for different athletes are unable to reach an agreement about compensation. ZIMBALIST REPORT at ¶ 94.

<sup>148</sup> SINGER REPORT at ¶ 17.

<sup>149</sup> SINGER REPORT at ¶ 71.

## Highly Confidential Under Protective Order

opponents, can then capitalize on its promotional skills to create a successful product in the marketplace. In addition, the reduction in transaction costs achieved by internalizing decisions about upcoming matches increases the number of matches, thereby expanding output to the benefit of consumers and athletes.

[REDACTED]

152

[REDACTED]

---

<sup>150</sup> Zuffa 30(b)(6) Deposition of Zuffa, LLC by Kirk D. Hendrick (November 29-30, 2016) [hereinafter HENDRICK CONTRACTS TR.] at 216.

<sup>151</sup> HENDRICK CONTRACTS TR. at 44-45

<sup>152</sup> EPSTEIN ACQUISITIONS TR. at 130-31.

<sup>153</sup> EPSTEIN ACQUISITIONS TR. at 131, 177-78; HENDRICK CONTRACTS TR. at 97-98.

<sup>154</sup> Deposition of Sean Shelby (April 12, 2017) at 120.

## Highly Confidential Under Protective Order

95. Inherent to this solution to the transaction cost issue is that the marketplace will rely on matches between athletes contracted to the same promoter. Co-promoted matches, in which athletes from different MMA promoters compete against one another, are apparently non-existent.<sup>155</sup> There are also significant risks for the promoter whose job it is to sell the public on the idea that its athletes are the best. The promoter for the losing athlete in a cross-promoted event not only has lost that one bout but may also have diminished its ability to promote future events featuring its athletes because of the loss in the reputation and brand it had tried to create.<sup>156</sup> When discussing whether there can be procompetitive benefits to Zuffa's contracting practices, Dr. Singer suggests that a more competitive MMA industry could have matchups between athletes from different promoters.<sup>157</sup> Yet he provides no evidence of such cross-promotions between any promoters in the market, either currently or historically. The absence of cross-promotion, even among Zuffa's competitors, is strong evidence that cross-promotion is an inferior business model in MMA—it has failed the market test. The market reality is one of intra-promoter matches only.

96. Given this market outcome in which intra-promoter bouts are the universal business practice—not only by Zuffa, but also by competing promoters—there is a natural tendency for a leading promoter to attract a significant share of the top athletes. This follows from the complementarity of athlete talents in producing high-quality bouts, and the desire among athletes to fight against the best, statements which appear repeatedly in Dr. Singer's report.<sup>158</sup> Thus, the fact that Zuffa is larger than its rivals, has a larger share of top athletes, and is more successful at attracting audience share and revenue is not indicative of anticompetitive conduct, but rather follows naturally from the solution to the transaction cost problem that has been adopted by all competitors in the marketplace; such an outcome is procompetitive. The market structure induces aggressive competition between promoters to stage appealing events featuring matches among

---

<sup>155</sup> When discussing the possibility of cross-promoted fights, the only example that Dr. Singer cites is a boxing match between an MMA athlete and a boxer. (SINGER REPORT at ¶ 269.)

<sup>156</sup> Deposition of Scott Coker, (August 3, 2017) [hereinafter COKER TR.] at 84-87.

<sup>157</sup> SINGER REPORT at ¶ 269; see also SINGER REPORT at ¶¶ 283-4.

<sup>158</sup> SINGER REPORT at ¶¶ 20, 106, 136, 138, 164.

## Highly Confidential Under Protective Order

their own contracted athletes. The most successful promoter will tend to attract the most talented athletes and produce the highest-valued events, at least until being supplanted by another promoter with a superior product or business acumen. In this regard, it is noteworthy that in Asia, which is the only other geographic market for MMA identified by Dr. Singer, he cites ONE Championship's claim that it has a 90 percent market share.<sup>159</sup>

97. Moreover, when viewed from the perspective of the marketplace implementing an efficient solution to a transaction cost problem, the horizontal acquisitions that are an element of the alleged Challenged Conduct discussed by Dr. Singer are in fact procompetitive. When competing promoters each have highly ranked athletes, but transaction costs deter promoters from arranging cross-promoted matches, horizontal acquisitions enable top athletes to compete against each other—the complementary inputs (highly talented athletes) are brought within a single firm, which the evidence indicates is necessary for them to fight each other. This result benefits customers, who want to see (and are willing to pay to see) matches between top athletes. As discussed below, it also benefits athletes, for whom compensation increased following these acquisitions. In Section IX, I show that Zuffa's horizontal acquisitions did not increase its market power.

#### **D. OTHER PROCOMPETITIVE BENEFITS OF ZUFFA'S CONTRACT PROVISIONS**

##### **1. Tolling Provisions**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

<sup>159</sup> "About ONE," available at <https://onefc.com/about-one/> cited in SINGER REPORT at ¶ 122.





Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

64

[REDACTED]

---

<sup>164</sup> Shaun Al-Shatti, “Bellator CEO Bjorn Rebney Responds to Criticism from Dana White: ‘It’s Very, Very Hypocritical,’” *MMA Fighting* (September 24, 2012), *available at* <https://www.mmafighting.com/2012/9/24/3384434/bellator-bjorn-rebney-respond-dana-white-criticism-matching-rights-ufc-hollett-nam>.

<sup>165</sup> SINGER REPORT at ¶ 68.

## Highly Confidential Under Protective Order

[REDACTED]

104. Dr. Singer cites Gilbert Melendez as an athlete who was retained by Zuffa under the right-to-match provision. Mr. Melendez fought a bout for Zuffa in October 2013.<sup>167</sup> Dr. Singer says as of February 2014, Mr. Melendez's contract was ending and he had come to an agreement with Bellator. Dr. Singer claims that in response, Zuffa exercised the right-to-match provision in order to retain Mr. Melendez.<sup>168</sup> Mr. Melendez signed a new contract with Zuffa that same month (February 2014).<sup>169</sup> In other words, only four months passed between the October 2013 bout that completed Mr. Melendez's earlier contract obligations with Zuffa and the February 2014 signing of the new contract. Mr. Melendez's experience is inconsistent with Dr. Singer's statement that Zuffa's right-to-match provision "impose[d] substantial costs and risks on Fighters."<sup>170</sup> Furthermore, Mr. Melendez was able to use the right-to-match provision to obtain a more favorable contract from Zuffa.<sup>171</sup>

---

<sup>166</sup> SINGER REPORT at ¶ 84.

<sup>167</sup> SINGER BACKUP.

<sup>168</sup> SINGER REPORT at n. 246.

<sup>169</sup> SINGER BACKUP.

<sup>170</sup> SINGER REPORT at ¶ 84.

<sup>171</sup> Fernando Quiles Jr., "Gilbert Melendez Explains How Free Agency Improved His UFC Contract," *MMA News* (August 20, 2017) available at <http://www.mmanews.com/gilbert-melendez-explains-how-free-agency-improved-his-ufc-contract>.

Highly Confidential Under Protective Order

[REDACTED]

106. [REDACTED]

**3. Champion's Clause**

[REDACTED]

---

<sup>172</sup> SINGER REPORT at n. 220.

<sup>173</sup> SINGER BACKUP; ZFL-2705160; ZFL-2209239-40; ZFL-2705173; ZFL-2705373-74; ZFL-2640748.

<sup>174</sup> SINGER REPORT at ¶ 84.

<sup>175</sup> SINGER REPORT at ¶ 69; see also Exhibit 6.

## Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

109. Furthermore, preserving a promoter's incentive to invest in athletes and events creates benefits for athletes and for the MMA audience: as Dr. Singer notes, athletes value the opportunity to develop their careers by fighting against highly-ranked opponents, and audiences are drawn to fights among highly-ranked opponents.<sup>177</sup> Dr. Singer ignores these obviously procompetitive effects.

#### 4. Ancillary Rights Provision

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>176</sup> COKER TR. at 18, 225-226.

<sup>177</sup> SINGER REPORT at ¶¶ 20, 107, 112, 119, 136, 138, 158, n. 362, 369, 577.

<sup>178</sup> For example, see NBA Collective Bargaining Agreement at Exhibit A, A-15-16, *available at* <http://nbpa.com/wp-content/uploads/2016/02/2017-NBA-NBPA-Collective-Bargaining-Agreement.pdf>.

Highly Confidential Under Protective Order

**5. Retirement Clause**

[REDACTED]

112. [REDACTED]

**E. DR. SINGER IGNORES THE EFFECT OF FREE-RIDING AND OTHER PROCOMPETITIVE EFFICIENCIES**

113. [REDACTED]

---

<sup>179</sup> SINGER REPORT at ¶ 282.

<sup>180</sup> SINGER REPORT at ¶ 283.

<sup>181</sup> SINGER REPORT at ¶ 283.

182

<sup>185</sup> SINGER REPORT at ¶ 262.

Highly Confidential Under Protective Order

[REDACTED]

**F. ZUFFA’S CONTRACTS DO NOT IMPAIR ATHLETES FROM GOING TO OTHER PROMOTERS**

**1. Contract Duration**

[REDACTED]

[REDACTED]

---

<sup>186</sup> Marc Raimondi, “Spike TV president: Bellator MMA 'on an even footing' with the UFC,” *MMAFighting* (February 8, 2015), *available at* <https://www.mmafighting.com/2015/2/8/7926603/spike-tv-president-bellator-mma-on-an-even-footing-with-the-ufc>.

<sup>187</sup> SINGER REPORT at ¶¶ 88-91.

[REDACTED]

<sup>189</sup> Exhibit 6; ZFL0500960; ZFL0489704-705.



Highly Confidential Under Protective Order

[REDACTED]

117. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>190</sup> SINGER REPORT at ¶ 89, Table 1. [REDACTED]

<sup>191</sup> [REDACTED]

<sup>192</sup> C. SILVA TR. at 13, 196-197.

Highly Confidential Under Protective Order

**2. Staggered Contracts Mean That Athletes Are Constantly  
Becoming Available to Competing Promoters**

[REDACTED]

**G. DR. SINGER’S CLAIM THAT ZUFFA EXPLOITED CONTRACT TERMS TO  
RENEW ATHLETES’ CONTRACTS ON TERMS FAVORABLE TO ZUFFA IS NOT  
SUPPORTED BY THE EVIDENCE**

119. Dr. Singer states that “Zuffa [e]xploited the [e]xclusionary [t]erms to [e]xtend and [r]enew [f]ighter [c]ontracts” which “created powerful incentives for Fighters to renew their contracts before the prior contracts expired, on terms favorable to Zuffa.”<sup>197</sup>

---

<sup>193</sup> SINGER REPORT at ¶ 154.

<sup>194</sup> SINGER REPORT at ¶ 84.

<sup>195</sup> Exhibit 30.

<sup>196</sup> SINGER REPORT at ¶ 154.

<sup>197</sup> SINGER REPORT at ¶¶ 76, 176.



Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

Highly Confidential Under Protective Order

**VI. DR. SINGER DOES NOT UNDERSTAND BASIC LABOR ECONOMICS OR THE OPERATION OF LABOR MARKETS: ECONOMIC MODELS DO NOT PREDICT THAT A WORKER SHOULD BE PAID A CONSTANT FRACTION OF A FIRM'S REVENUE**

**A. THE CORRECT WAY TO MEASURE MMA ATHLETE'S COMPENSATION IS THE ATHLETE'S MARGINAL REVENUE PRODUCT**

124. In Section III.D.1 of his report, Dr. Singer presents results from regressions relating a measure of MMA athletes' compensation to his measure of purported foreclosure. The measure of compensation that Dr. Singer uses is an athlete's pay *as a share of event revenue*. As explained by Dr. Singer, "the dependent variable to be explained is the share of event revenue received by a given Fighter at a given event."<sup>203</sup>

125. Though Plaintiffs' theory of harm is tied to Zuffa's alleged monopsony power—that is, Plaintiffs' allege that Zuffa was able to suppress wages in the market for its labor input, MMA athletes—it is useful to draw a parallel to the usual analysis of monopolistic harm in an output market. In the case of monopoly, anticompetitive harm to consumers occurs because the price of a good, measured in dollars per unit, is higher than it would be in the absence of monopoly power. In the case of labor market monopsony, the relevant "price" is compensation paid to affected workers—their wage or salary—also measured in dollars per unit of work. The question is: Was MMA athletes' pay artificially suppressed? **But an athlete's pay as a share of event revenue is not the same thing as an athlete's pay.** An athlete's pay is the actual amount of compensation the athlete takes home. An athlete's pay as a share of revenue is the percentage calculated by dividing the athlete's actual pay by the total event revenue.

126. To state the obvious, an athlete's pay as a share of event revenue can easily decline even if pay, measured as it should be in dollars per athlete, is increasing. This is especially likely if Zuffa's promotional investments drive greater interest in its MMA events, so that Zuffa's revenues at each event increase because of greater attendance or viewership. Dr. Singer's models ignore this tenet of labor economics and estimate the relationship between MMA athletes' pay as a share of revenue and the fraction of MMA athletes that are allegedly foreclosed by Zuffa. In so doing, his models are completely silent on the true metric of anticompetitive harm, which would

---

<sup>203</sup> SINGER REPORT at ¶ 180.

## Highly Confidential Under Protective Order

be a reduction in the dollar compensation of MMA athletes. As a result, his putative evidence of anticompetitive “impact” is nothing of the kind—his results are simply useless for analyzing the issues in this case.

127. While Dr. Singer argues that it is correct to measure worker compensation as a share of revenue, this claim demonstrates a misunderstanding of basic labor economics. The standard economic models of competitive labor markets explain the determination of workers’ wages, measured in dollars per worker. They do not explain the determination of a worker’s pay as a percentage of the employer’s revenue, which is not a measure of anything useful or informative. Furthermore, as I demonstrate below, the relationship between a worker’s pay as a share of revenue and Dr. Singer’s measure of “foreclosure” (which, in reality, does not measure foreclosure at all) is not informative of whether Zuffa has exercised monopsony power in the labor market. Dr. Singer’s estimated measure of anticompetitive impact would occur if Zuffa had no market power in the labor market, *i.e.*, if the labor market were perfectly competitive, and Zuffa were better than its competitors at promoting fights and developing MMA athletes, which the evidence clearly indicates.

128. To support his claim that it is appropriate to measure worker compensation as a share of revenue, Dr. Singer refers to standard economic models of labor markets.<sup>204</sup> But Dr. Singer’s description of what these standard economic models say is simply wrong. These models are taught in undergraduate and graduate courses in labor economics, and in undergraduate and graduate level courses in microeconomics.

129. In what follows, I explain why Dr. Singer’s approach is not supported by standard economic models. In Section VII, I demonstrate this point empirically: there is no relationship between Dr. Singer’s measure of monopsony power and the level of compensation that Zuffa pays its athletes, which is the correct measure of pay.

---

<sup>204</sup> SINGER REPORT at n. 454.

## Highly Confidential Under Protective Order

**B. STANDARD ECONOMIC MODELS OF COMPETITIVE LABOR MARKETS MAKE PREDICTIONS ABOUT THE LEVEL OF WORKER PAY, NOT ABOUT WORKER PAY AS A SHARE OF REVENUE**

130. In a competitive labor market, the wage (price) of a particular type of labor is determined by supply and demand. Competition for labor's services causes the wage to equal the value of a worker's marginal product—what he or she can add to the value of output in competing uses. The wage is then in the form of a rental price for labor's services, measured in dollars per unit of time or dollars per unit of a service performed. Thus, my salary at the University of Chicago is measured as a certain number of dollars per year. To retain professors of a given quality, the University of Chicago must pay competitive salaries, which is to say that Chicago's faculty are paid nearly the same as what other, comparable, institutions would pay us. The important point here is that labor market competition determines the level of our pay, measured in dollars per year. This operation of the labor market has nothing to say about my salary as a percentage of the University's revenue. If, for some reason, the demand for a University of Chicago education increased sharply relative to other schools, allowing the University to charge much higher tuition, my salary would still be determined by what it costs to attract and retain faculty of comparable skill. My salary would be little changed, if at all, but my salary as a share of the University's revenue would decline. Such a decline says nothing about the exercise of monopsony power—only the level of pay, measured in dollars, would be affected by the exercise of monopsony power.

131. This model of wage determination is ubiquitous in both undergraduate and graduate courses in labor economics, as well as in undergraduate and graduate courses in microeconomic theory. Treatments of these models appear in virtually any undergraduate-level labor economics textbook, and in most graduate-level microeconomics textbooks.<sup>205</sup> I have taught these models at

---

<sup>205</sup> George Borjas, *Labor Economics* (6<sup>th</sup> Edition, 2012) at Chapter 3 and pp. 550-551; Ronald G. Ehrenberg and Robert S. Smith, *Modern Labor Economics: Theory and Public Policy* (9<sup>th</sup> Edition, 2006) at Chapter 3 and p. 65 ("Clearly, equation (3.5) [referring to the equation that states the marginal revenue product of labor is equal to the wage] is stated in terms of some *monetary* unit (dollars, for example)."); Michael L. Katz and Harvey S. Rosen, *Microeconomics* (3<sup>rd</sup> Edition, 1998) at p. 215 ("A firm that is a price taker in both the factor market and the output market maximizes its profit by hiring a factor up to the point at which marginal physical product times the output price is equal to the input price, or  $MPP \times p = w$ ."); Hal R. Varian, *Microeconomic Analysis* (3<sup>rd</sup> Edition, 1992) at pp. 25-28; Andreu Mas-Collel, Michael D. Whinston, and Jerry R. Green, *Microeconomic Theory* (1995) at pp. 135-137.

## Highly Confidential Under Protective Order

the graduate level in the University of Chicago for decades. In all cases, the wage determined by the operation of supply and demand in the labor market is expressed as a dollar amount; the wage is not expressed as a share of revenue.

[REDACTED]

**C. DR. SINGER IS INCORRECT WHEN HE CLAIMS SHARE OF REVENUE IS EQUIVALENT TO THE ATHLETES' MARGINAL REVENUE PRODUCT**

133. Because Dr. Singer insists on analyzing an MMA athlete's pay as a fraction of Zuffa's event revenue, it is worth investigating what, if anything, economics says about this percentage. Consider a firm that increases its investment in advertising. If the advertising is effective it will generate greater sales and more revenue. This greater demand might induce the firm to hire more workers, but in a competitive labor market the firm will be able to expand employment without paying a higher wage. Then the wage as a share of the firm's revenue declines, but this has nothing to do with monopsony power—by construction of this example, there is no monopsony power and wages do not decline.

134. Like the advertising in this example, much of Zuffa's revenue is generated by Zuffa's investments—skillfully promoting events and athletes, scheduling fights involving compelling matchups, advertising, pushing for regulatory change that allows for the spread of MMA events, and so on. Dr. Singer admits as much in his report.<sup>207</sup> Elementary economics predicts that

---

<sup>206</sup> SINGER REPORT at n. 454.

<sup>207</sup> SINGER REPORT at ¶ 284.



## Highly Confidential Under Protective Order

Zuffa's revenue should therefore be paid to compensate the inputs necessary to make those investments. Competition implies that an athlete's pay as a share of event revenue should decline as Zuffa makes successful revenue-enhancing investments. The better Zuffa is at "producing high-quality events" and "effectively promot(ing)" them, the more Zuffa's revenue increases, the more revenue will go to those responsible for producing and promoting the events, and the smaller will be the compensation of an athlete as a share of event revenue. This occurs even if the level of athletes' compensation rises.

135. This brings us to Dr. Singer's regression model, which purports to demonstrate anticompetitive impact on MMA athlete's compensation due to "foreclosure." Specifically, the regression estimates Dr. Singer reports in Section III.D.1 of his report show a negative relationship between his measure of purported foreclosure—the share of athletes under contract with Zuffa—and an athlete's pay as a *share* of event revenue. In other words, he finds that as Zuffa's share of (a defined group of) MMA athletes under contract increased, a typical athlete's pay as a fraction of event revenue declined. Dr. Singer interprets this negative relationship as evidence of anticompetitive impact—*i.e.* that Zuffa exercised monopsony power in the market for MMA athletes, reducing their pay below competitive levels. Dr. Singer also bases his calculations of harm to MMA athletes on this negative relationship.

136. But the negative correlation Dr. Singer documents between his foreclosure share and an athlete's pay as a share of event revenue is not informative of whether Zuffa has exercised monopsony power in the Input Markets. This is because the negative correlation would exist if, on the one hand, Zuffa succeeded in increasing event revenue through wholly procompetitive means without the exercise of monopsony power, or, on the other hand, Zuffa was exercising monopsony power and reducing pay to its athletes. In short, Dr. Singer's proposed test cannot distinguish between a negative correlation resulting from Zuffa's exercise of monopsony power and a negative correlation resulting from competition on the merits.

137. To see this, let  $y(i, t)$  denote the pay of athlete  $i$  as a share of event revenue at date  $t$ . Let  $Z(t)$  denote the share of MMA athletes under contract with Zuffa at date  $t$ . The theoretical foundation for Dr. Singer's regression is his assertion that a negative relationship between  $y(i, t)$  and  $Z(t)$  demonstrates the exercise of monopsony power. As a matter of basic economics, this

Horizontal bar chart showing the percentage of respondents who answered 'Yes' to various questions. The chart has 11 bars, all of which are blacked out for redaction. The x-axis is labeled with the number 208.

[illegible]

\_\_\_\_\_

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

---

[REDACTED]

Highly Confidential Under Protective Order

**VII. DR. SINGER'S IMPACT REGRESSION IS FLAWED**

142. I explained above why Dr. Singer's regression model is not informative about either "foreclosure" or whether Zuffa has exercised monopsony power to suppress the compensation of MMA athletes. I explained that pay as a share of event revenue is a useless measure for this purpose. Rather, economics indicates that the relevant metric to measure compensation is the level of pay (*i.e.*, what employers actually pay their employees), measured in dollars. Put simply, when assessing the alleged exercise of monopsony power, the relevant question is whether Zuffa paid its athletes less as Zuffa's alleged monopsony power increased. Below, when I modify Dr. Singer's regression model to examine athletes' compensation levels instead of their compensation as a share of Zuffa revenues (*i.e.*, I modify the regression model to be consistent with how labor economists actually think about monopsony power), I find no evidence that athletes' compensation is negatively correlated with Dr. Singer's measure of labor market foreclosure. This result is also highly relevant to the issue of class certification and damages since it implies that there is no antitrust impact and so *no* common impact: Zuffa athletes did not suffer damages because of the Challenged Conduct.<sup>211</sup>

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>211</sup> Dr. Singer's regression model is designed to measure the average effect of foreclosure on Zuffa athletes' compensation. If this average effect is positive or statistically indistinguishable from zero, then the regression model implies that no athletes' compensation decreased when Dr. Singer's measure of foreclosure increased. See ABA Section of Antitrust Law, *Proving Antitrust Damages* (2<sup>nd</sup> Edition, 2010) at p. 131. On the measurement of antitrust impact, the ABA writes: "Nevertheless, (1) a properly specified econometric model showing that an explanatory variable has a statistically significant partial effect on the dependent variable, holding constant other factors, and (2) a sound economic theory explaining why one would expect the explanatory variable to have a causal effect, together provide evidence consistent with the existence of a causal relationship and an estimate of the magnitude of the effect." In other words, since Dr. Singer's regression does generate a statistically significant negative correlation between athletes' compensation and foreclosure, it does not imply any Zuffa athletes suffered damages.

## Highly Confidential Under Protective Order

[REDACTED]

144. When I correct either of the errors Dr. Singer made in implementing his regression model, either individually or in combination, his model shows that members of the proposed class were not damaged (even measuring compensation as a fraction of event revenue) by Zuffa's conduct. Thus, Dr. Singer's model, even taken on its own incorrect terms, shows there is not a negative correlation between Dr. Singer's foreclosure shares and the share of event revenues that Zuffa pays its athletes.

145. Below, I discuss each of these flaws in Dr. Singer's regression model in detail. To facilitate this discussion, Exhibit 12 summarizes each of the flaws in Dr. Singer's regression model, the steps I have taken to address these flaws, and how the conclusions drawn from Dr. Singer's regression model with respect to class certification change as a result.

**A. DR. SINGER'S REGRESSION MODEL IS NOT INFORMATIVE ABOUT ZUFFA'S MONOPSONY POWER BECAUSE IT USES THE WRONG DEPENDENT VARIABLE**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>212</sup> Sherwin Rosen, "Distinguished Fellow: Mincering Labor Economics," *The Journal of Economic Perspectives*, vol. 6, no. 2 (1992). Compensation regressions of this type are often referred to as Mincer regressions. Using the log of athletes' compensation makes the compensation regression informative about changes in athletes' compensation in percentage terms. For example, the regression might imply that a ten percentage point increase in Zuffa's foreclosure share causes a one percent increase in athletes' compensation. Dr. Singer uses the same approach in two of his analyses that address compensation structure. SINGER REPORT at § IV.B.2.

<sup>214</sup> I make no adjustments to Dr. Singer's calculated foreclosure shares. In Sections X to XIV, I discuss Dr. Singer's errors in conceptualizing and calculating these foreclosure shares.

Highly Confidential Under Protective Order

[REDACTED]

**B. ADDITIONAL ERRORS IN DR. SINGER'S REGRESSION MODEL BIAS HIS RESULTS**

[REDACTED]

[REDACTED]

[REDACTED]

<sup>217</sup> I omit these estimated coefficients from Exhibit 13. The regression output is contained in the backup materials accompanying this report.

Highly Confidential Under Protective Order

[REDACTED]

**1. Strikeforce Is Not an Appropriate Benchmark for Zuffa**

[REDACTED]

[REDACTED]

[REDACTED]

<sup>219</sup> SINGER REPORT at ¶ 183. Dr. Singer explains that Strikeforce bouts occurring prior to 2011 “effectively serve as benchmarks for the Athlete Shares that Zuffa Athletes would have received in the but-for world.”



<sup>221</sup> See Greene, William H., *Econometric Analysis* (7<sup>th</sup> Edition, 2011) at pp. 168-169. The Chow test (or more generally, an F-Test) is one of the most widely used econometric tests. See also ABA Section of Antitrust Law, *Proving Antitrust Damages* (2<sup>nd</sup> Edition, 2010) at p. 179. The ABA explains that a Chow test should be used to test a regression model when there is reason to believe the model's coefficients are different across customers or periods of time. "However, there may be reason to think that customers have different responses to costs and demand conditions, so there could be different coefficients on the explanatory variables across customers, including the variable measuring damages. In this case, it may be necessary to estimate the model for different groups of

Highly Confidential Under Protective Order

[REDACTED]

**2. Dr. Singer's Regression Model Predicts Zero Damages After Removing the Strikeforce Benchmark**

[REDACTED]

---

customers, or otherwise to employ a more complex model that takes these differences into account.” If the regression model fails a Chow test, “the appropriate model needs to adequately control for such [differences].”

[REDACTED]

[REDACTED]

[REDACTED]

Highly Confidential Under Protective Order

[REDACTED]

225

[REDACTED]

26

[REDACTED]

---

<sup>225</sup> See ABA Section of Antitrust Law, *Proving Antitrust Damages* (2<sup>nd</sup> Edition, 2010) at p. 130. On the reliability of econometric analyses, the ABA writes: “Moreover, econometric results typically should not change materially with minor changes to the data (e.g., deleting a few observations).”

[REDACTED]

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

160. To summarize briefly, after removing pre-acquisition Strikeforce bouts, two of Dr. Singer's three regression models imply that there is no statistically significant relationship between compensation as a share of revenue and foreclosure. Because Dr. Singer's regression models do not predict that athletes' compensation was reduced by Zuffa's alleged foreclosure, they do not provide evidence that class members were harmed.

**3. By Construction, Using Revenue-Weighted Foreclosure Shares  
Generates a Mechanical Negative Correlation Between  
Foreclosure and Compensation**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>228</sup> The estimated coefficient on Dr. Singer's Tracked Foreclosure share is statistically significant only at the 10 percent level. Economists do not typically use the 10 percent threshold when defining statistical significance. In practice, economists characterize a result as statistically significant if it is statistically significant at the 5 percent or 1 percent level. See *Reference Manual on Scientific Evidence*, Third Edition (2011) at p. 251, available at <https://www.fjc.gov/sites/default/files/2015/SciMan3D01.pdf>.

<sup>229</sup> SINGER REPORT at ¶ 112 ("There are no close substitutes for headliners.")

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

---

[REDACTED]

[REDACTED]

[REDACTED]

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

---

[REDACTED]

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

**C. THE SAME ERRORS THAT AFFECT DR. SINGER'S REGRESSION FOR THE  
BOUT CLASS AFFECT HIS REGRESSION FOR THE IDENTITY CLASS  
SUBGROUP**

[REDACTED]

---

<sup>235</sup> SINGER REPORT at ¶ 112.

<sup>236</sup> SINGER REPORT at ¶ 237.

Highly Confidential Under Protective Order

**VIII. OTHER METHODS SHOW HOW ATHLETES HAVE BENEFITTED:  
ZUFFA ATHLETES PAY HAS GROWN**

[REDACTED]

[REDACTED]

---

[REDACTED]

[REDACTED]



<sup>239</sup> In all of my analyses, I adjust compensation levels to account for inflation between 2005 and 2016 using the Bureau of Labor Statistics CPI-U Index. Reported compensation levels are in 2016 dollars.

[REDACTED]

[REDACTED]

[REDACTED]

Highly Confidential Under Protective Order

**IX. ZUFFA'S ACQUISITIONS DID NOT GIVE ZUFFA MARKET POWER IN THE INPUT OR OUTPUT MARKETS**

172. The actions that Plaintiffs allege Zuffa used to foreclose rival MMA promoters include some forms of horizontal conduct, primarily the acquisition of rival promoters.<sup>242</sup> In this section I show that the acquired promoters were small, and so it is not plausible that these acquisitions allowed Zuffa to exercise monopoly or monopsony power. Moreover, the MMA marketplace has low entry barriers, due in large part to Zuffa's trailblazing efforts to raise the public profile of MMA, clear regulatory hurdles, and open up distribution channels for MMA promoters. Given these low entry barriers, Zuffa's success in expanding the market has attracted a number of rival MMA promoters that are larger than the MMA promoters Zuffa acquired and that compete aggressively against Zuffa in the current MMA marketplace.

**A. THE MMA PROMOTERS ACQUIRED BY ZUFFA WERE SMALL, EXITING THE MARKET, OR BOTH**

173. Plaintiffs in their Complaint, and Dr. Singer in his report, refer to several acquisitions Zuffa made of competing MMA promoters as evidence of anti-competitive behavior. Zuffa acquired WFA and WEC in 2006, Pride in 2007, Affliction in 2009, and Strikeforce in 2011.<sup>243</sup> At the times of these acquisitions, each of the acquired MMA promoters was either too small to appreciably change Zuffa's market share in either the input or output market, was exiting the market, or both.

[REDACTED]

---

<sup>242</sup> SINGER REPORT at ¶2.

<sup>243</sup> EPSTEIN ACQUISITIONS TR., Ex. 55 at Tab A at 2-3.

<sup>244</sup> In implementing this analysis, I assume any athletes who fought for an acquired promoter during the two years prior to the acquisition would not have fought for Zuffa following the acquisition. For example, if an athlete fought for Strikeforce in 2010 (prior to Zuffa's 2011 acquisition), I assume that any post-acquisition Zuffa bouts the athlete participated in were actually promoted by a competitor.

<sup>245</sup> I obtain very similar results using Dr. Singer's Headliner market. These results are contained in my backup materials.

## Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>246</sup>

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>249</sup>

177. In discussing these acquisitions, Dr. Singer in his report and Plaintiffs in their Complaint note that Zuffa acquired the promoters and that, after the acquisition, Zuffa “absorbed”, “closed down”, “shut down”, or “dissolved” the acquired promoters.<sup>250</sup> Post-acquisition, many of the athletes who had previously fought for the acquired promoters fought instead for Zuffa under the UFC banner.<sup>251</sup> As a matter of economics, the competitive effects of these acquisitions do not depend on whether Zuffa acquired the promoters and continued to operate them as separate brands, or whether Zuffa combined the operations of these small competitors into its existing operations (thereby allowing acquired athletes to compete in UFC events). In other words, the

---

<sup>246</sup> As I discuss below, Dr. Singer has also neither shown any evidence that Zuffa had monopsony power, nor that Dr. Singer’s measure of Zuffa’s purported foreclosure of the market for athletes is associated with any decrease in athlete pay or harm to athletes.

<sup>247</sup> EPSTEIN ACQUISITIONS TR. at 88-90; see also FERTITTA TR. 82- 87.

<sup>248</sup> EPSTEIN ACQUISITIONS TR. at 168.

<sup>249</sup> EPSTEIN ACQUISITIONS TR. at 70-71 (WFA), 150-151 (Affliction); KNAPP TR. at 22-24.

<sup>250</sup> See, for example, SINGER REPORT at ¶¶ 41, 43, 51; COMPLAINT at ¶ 133.

<sup>251</sup> EPSTEIN ACQUISITIONS TR. at 77-78, 180-81, 186-87.

## Highly Confidential Under Protective Order

closing of the acquired promoters is irrelevant; the athletes from the acquired promoters were either signed by Zuffa or made available to sign with Zuffa's competitors. More importantly in evaluating the competitive effects of these acquisitions, as I discuss in Section XV, Dr. Singer provides no evidence of a reduction in the number of MMA events (or an increase in the price of MMA events) as a result of Zuffa's conduct.

**B. THE STRIKEFORCE ACQUISITION WAS PRO-COMPETITIVE**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] 53

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] 58

<sup>252</sup> See, generally, the DICK REPORT and the FORT REPORT.

<sup>253</sup> DICK REPORT at ¶ 36.

<sup>254</sup> DICK REPORT at ¶ 24.

<sup>255</sup> DICK REPORT at ¶¶ 37, 39.

<sup>256</sup> DICK REPORT at ¶¶ 41-44.

<sup>257</sup> DICK REPORT at Exhibits 23A, 23B.

<sup>258</sup> See also DICK REPORT at ¶¶ 81-90.

Highly Confidential Under Protective Order

**C. STRIKEFORCE ATHLETES BENEFITTED AFTER ZUFFA ACQUIRED STRIKEFORCE**

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>259</sup> SINGER REPORT at ¶ 47.

<sup>260</sup> SINGER REPORT at ¶ 40.

<sup>261</sup> I used three year windows before and after the acquisition so that my analysis included a large enough number of athletes who fought for Strikeforce and Zuffa so that I can reliably measure compensation. When I narrow the window, I obtain similar results.

[REDACTED]

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>263</sup> Three of the 84 athletes participated in 6 WEC bouts prior to the acquisition that were promoted by Zuffa. Exhibits 21 and 22 do not include compensation from these 6 bouts.

[REDACTED]

[REDACTED]

Highly Confidential Under Protective Order

[illegible]

#### D. BARRIERS TO ENTRY FOR MMA PROMOTERS ARE LOW

187. As discussed above in Section IV.A, the entry barriers for MMA promoters are low. Where entry barriers are low, acquisitions are less likely to cause anticompetitive harm because new competitors can rapidly enter the market and compete. New and expanding promoters have ready access to all the inputs needed to stage events, including athletes, venues, sponsors, and broadcast or streaming opportunities.

188. There is a large and ever-growing selection of new MMA athletes for promoters to sign who are not signed to any promoter.<sup>267</sup> Even for those athletes under contract with the UFC,

[REDACTED]

<sup>267</sup> See Section IV.A.

## Highly Confidential Under Protective Order

competitors have ready access to these athletes on a consistent basis, as described above in Section V.F.

189. Competitors also have access to a wide array of venues. The UFC itself has used 127 different venues worldwide between 2005 and 2015<sup>268</sup> and there are many venues that competing MMA promoters have used that presumably are also available to new entrants as well.<sup>269</sup>

[REDACTED]

191. Competitors similarly have access to a wide variety of pay and free broadcast options both through television or cable and increasingly through the internet as well. Zuffa's exclusive agreement with Fox only limits competitors' access to that one distribution channel for the duration of the contract but leaves all other options open. For example, Bellator is shown on cable television network Spike TV, which will soon be re-branded as the Paramount Network.<sup>273</sup> The Professional Fighters League has a broadcast partnership with NBC Sports Network, another

---

<sup>268</sup> DROPICK 30(B)(6) TR., Exhibit 51, Tab 1.

<sup>269</sup> See Section IV.A.

[REDACTED]

<sup>272</sup> "Miller Lite Named the Official Title Sponsor for Bellator MMA," *Spike* (Feb. 10, 2015), available at <http://www.spike.com/articles/6cyxhg/bellator-mma-miller-lite-named-the-official-title-sponsor-for-bellator-mma>.

<sup>273</sup> Luke Thomas, "Bellator MMA programming to continue in new Spike re-branded Paramount Network," *MMA Fighting* (Feb. 9, 2017), available at <https://www.mmafighting.com/2017/2/9/14560444/bellator-mma-programming-spike-re-branded-paramount-network-mma-news>.



## Highly Confidential Under Protective Order

cable television network.<sup>274</sup> Zuffa does not have any exclusive arrangement with Pay-Per-View and other competitors have hosted PPV events.<sup>275</sup>

192. These low barriers to entry are evidenced by the myriad of competitors who have entered the market after Zuffa's acquisitions, including, Bellator, the Professional Fighters League, ONE Championship, and ACB. In Exhibit 23, I show that, tracking the events by promoters that Zuffa acquired and those that came after it shows that after Zuffa's acquisitions, new competitors have entered the market and grown. As a result, there is no reason to conclude that a temporary reduction in competitors in the marketplace due to an acquisition would have long-term effects on the competition in the market.

**E. THERE IS NO DIRECT EVIDENCE THAT THE CHALLENGED CONDUCT EXCLUDED RIVALS**

193. Dr. Singer claims that there is direct evidence that Zuffa's Challenged Conduct excluded rivals, citing his analysis of foreclosure and market shares.<sup>276</sup> However, other than with respect to horizontal acquisitions, he fails to provide actual direct evidence that the Challenged Conduct excluded rivals. A horizontal acquisition inherently reduces the number of competitors by one, absent new entry. However, I have already shown above that these acquisitions did not increase Zuffa's market power. Dr. Singer fails to distinguish between the impact of the Challenged Conduct and the procompetitive results of aggressive competition by Zuffa. As discussed in Section III, aggressive competition through superior products and business acumen will necessarily exclude less successful competitors and increase Zuffa's share in both the input and output markets. Even if it were true, as Dr. Singer claims, that "Zuffa has no close competitors remaining in the market" and that Zuffa's market share dwarfs that of other MMA promoters,<sup>277</sup> Dr. Singer provides no direct evidence that the claimed dominance results from the Challenged

---

<sup>274</sup> Jerry Bonkowski, "NBCSN to televise new MMA league bout after Daytona Xfinity race," *NBCSports* (Jun. 1, 2017), available at <http://nascar.nbcports.com/2017/06/01/nbc-n-to-televise-new-mma-league-exhibition-bout-after-daytona-xfinity-race/>.

<sup>275</sup> Steven Marrocco, "Bellator 180 pay-per-view price set at \$49.95 for high-definition," *MMA Junkie* (March 27, 2017), available at <http://mmajunkie.com/2017/03/bellator-180-pay-per-view-price-set-at-49-95-for-high-definition> (discussing PPV pricing for Bellator 180 and Bellator 120).

<sup>276</sup> SINGER REPORT at ¶149.

<sup>277</sup> SINGER REPORT at ¶149.

## Highly Confidential Under Protective Order

Conduct rather from successful, legitimate competition. And, as noted above, he provides no evidence that the growth in Zuffa's market share has harmed anyone, particularly athletes. On the contrary, athlete compensation increased as Zuffa grew.

194. In fact, as I discuss in Sections XIII and XIV, Dr. Singer's measures of market shares are flawed and overstate Zuffa's actual market share. Particularly when viewed from the perspective of individual weight classes, there is a sufficient number of highly ranked athletes not under contract with Zuffa to provide opportunities for competitors to set up compelling matches. Moreover, promoters do not need access to highly ranked athletes in all weight classes to be successful. For example, Scott Coker explained that Strikeforce signing top heavyweight Fedor Emelianenko and having other top heavyweights made Strikeforce a stronger competitor in the MMA promotion business and "helped the brand tremendously in the perception of the general public and our fans, and I think we gained a lot of fans all over the world."<sup>278</sup> Invicta has also succeeded by promoting only women's MMA in five weight classes.<sup>279</sup> Given that there are some weight classes that are not included within the UFC, Zuffa cannot foreclose rival promoters from the "critical input" needed to compete in the market. This lack of foreclosure is confirmed by the testimony of rival MMA promoters, who indicated that they could obtain the athletes needed to produce events.<sup>280</sup>

**X. DR. SINGER ARBITRARILY DEFINES FORECLOSURE FOR THE PURPOSE OF ASSESSING INJURY AND DAMAGES**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>278</sup> COKER TR. 105-107.

<sup>279</sup> Invicta Fighting Championship, "About," *available at* <http://www.invictafc.com/about-us/>.

<sup>280</sup> C. SILVA TR. at 204-05; ATENCIO TR. at 87-88; Deposition of Kurt Otto (February 6, 2017) [hereinafter OTTO TR.] at 284-287; COKER TR. at 272-273.

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>281</sup> Sections XIII and XIV identify additional errors in Dr. Singer’s foreclosure share calculations.

<sup>282</sup> SINGER TR. at 39.

<sup>283</sup> SINGER REPORT at ¶¶ 250, 252. (“These estimates assume conservatively that Zuffa’s foreclosure share would fall to 30 percent in the but-for world (a level sufficient to cause anticompetitive effects), instead of falling to zero.”) See also SINGER TR. at 238-239.

<sup>284</sup> SINGER REPORT at ¶¶ 153, 168.

<sup>285</sup> SINGER TR. at 46-49.

Highly Confidential Under Protective Order

[REDACTED]

**A. UNDER DR. SINGER'S MEASURE OF CONTRACT DURATION, FORECLOSED ATHLETES CAN INCLUDE ATHLETES WHO WERE UNDER CONTRACT WITH ZUFFA FOR SIGNIFICANTLY LESS THAN 30 MONTHS**

[REDACTED]

---

<sup>286</sup> See Exhibit 6; Section V.F.

[REDACTED]

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

**XI. DR. SINGER DOES NOT DEMONSTRATE CAUSATION OF COMPETITIVE VERSUS ANTICOMPETITIVE CONDUCT; HE SIMPLY DEFINES A BUT-FOR WORLD AS A WORLD WITH MORE COMPETITION**

199. As Dr. Singer states, aggregate damages to athletes reflect the underpayment of athlete compensation “attributable to the Challenged Conduct.”<sup>289</sup> Accordingly, computing damages requires projecting what the MMA marketplace would look like “in a but-for world absent the Challenged Conduct,” and the level of athlete compensation in that but-for world.<sup>290</sup> He defines his “but-for world where...the foreclosure share wasn’t as high as it was in the actual [world].”<sup>291</sup> However, there are at least three errors in Dr. Singer’s projection of the but-for world. First, he has not attempted to demonstrate causation from any specified conduct. The only injury and damages are tied generally to a reduction in “foreclosure.” Second, as discussed in Section X, he assumes that eliminating the Challenged Conduct would make the market competitive, using an arbitrary standard about what would be a competitive foreclosure rate, rather than actually projecting how removing the Challenged Conduct (but preserving all of the other procompetitive elements that contribute to Zuffa’s market power) would change the market. Third, he does not take into account how eliminating the procompetitive aspects of the Challenged Conduct will impact market outcomes.

200. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>289</sup> SINGER REPORT at ¶ 245.

<sup>290</sup> SINGER REPORT at ¶ 246.

<sup>291</sup> SINGER TR. at 31.

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**XII. DR. SINGER'S FORECLOSURE FRAMEWORK MEANS THAT HE HAS NOT EVEN ATTEMPTED TO DEMONSTRATE THAT MANY OF PLAINTIFFS' ALLEGATIONS HAD AN ANTICOMPETITIVE EFFECT**

201. In his regression assessing common impact, Dr. Singer only considers the impact of the contractual restrictions in PAR contracts that, he claims, extend the period of exclusivity when an athlete is under contract to Zuffa. Similarly, when computing damages using his foreclosure regression benchmark, Dr. Singer only estimates the harm due to the alleged foreclosure provisions.<sup>293</sup> Dr. Singer makes no attempt to establish that there was anticompetitive harm from other elements of Plaintiffs' Challenged Conduct apart from the exclusive aspect of PAR contracts or to estimate damages attributed to those elements, including horizontal acquisitions,<sup>294</sup> counter programming,<sup>295</sup> the champion's clause,<sup>296</sup> the retirement clause and

---

<sup>292</sup> In fact, Dr. Singer states that revenues could increase in the but-for world based on what he asserts is a reduction in the number of events due to the Challenged Conduct. (SINGER REPORT at ¶246.) I address this alleged relationship between the Challenged Conduct and the number of MMA events in Section XV.C.2.

<sup>293</sup> SINGER REPORT at ¶ 249.

<sup>294</sup> SINGER TR. at 251-254.

<sup>295</sup> SINGER TR. at 254-255.

<sup>296</sup> SINGER TR. at 257.

## Highly Confidential Under Protective Order

other tolling provisions,<sup>297</sup> restrictions on the use of clips and sponsors with other promoters,<sup>298</sup> and exclusivity provisions with venues and sponsors.<sup>299</sup>

### **XIII. DR. SINGER'S DEFINITION OF A RELEVANT ATHLETE MARKET IS FLAWED**

202. As part of his assessment of Zuffa's alleged monopsony power in the input market, Dr. Singer defines a relevant input market and calculates Zuffa's share in that market. As a general matter, the purpose of defining a relevant market is to identify the sources of competitive pressure on a firm. It is a useful step in assessing a firm's market power (*i.e.*, its power to control price or restrict output), because in order to assess the degree of market power possessed by a firm, the extent to which the firm competes with other firms in the same market can be a useful metric. Once a market is defined, market shares are often calculated. It is important to note that market shares do not provide a direct assessment of market power since they do not directly address the question of power over price or the ability to restrict output. Furthermore, it is worth reiterating that a large market share or even substantive market power is not equivalent to anticompetitive harm; for example, these outcomes often result from superior business acumen.

203. With that context, I address Dr. Singer's assessment of input market definition and market power. In his report, Dr. Singer conducts what he refers to as an "indirect" assessment of market power, in which he infers the existence of monopsony power from Zuffa's alleged market share. Dr. Singer defines a relevant input market for MMA athletes and calculates Zuffa's share of that input market.<sup>300</sup> It is well known that this "structure-conduct" approach is an unreliable method of inferring either the existence of or exercise of market power.

204. Dr. Singer defines the relevant input market "based on the alternatives to which fighters could reasonably substitute to counteract an exercise of monopsony power by Zuffa."<sup>301</sup>

---

<sup>297</sup> SINGER TR. at 258.

<sup>298</sup> SINGER TR. at 259.

<sup>299</sup> SINGER TR. at 259-260.

<sup>300</sup> SINGER REPORT at ¶¶ 93-95.

<sup>301</sup> SINGER REPORT at ¶ 99.

## Highly Confidential Under Protective Order

205. Dr. Singer proposes two alternative measures of the relevant input market, and one measure of a relevant input submarket.<sup>302</sup> Dr. Singer's first measure of the relevant input market is the "Tracked" measure, which includes "all Fighters fighting for an MMA promoter included in the FightMetric database (which 'tracks' Fighter performance)..."<sup>303</sup> He states that FightMetric tracks statistics of athletes associated with the "most prominent [MMA] organizations in the world."<sup>304</sup> Dr. Singer's second measure of the relevant input market is the "Ranked" measure. This measure expands on the "Tracked" measure by adding to it all athletes that (a) are ranked in the FightMatrix ranking database,<sup>305</sup> or (b) participated in a bout for ONE Championship (an Asian promoter).<sup>306</sup> Dr. Singer also defines a relevant input submarket using the "Headliner" measure. This measure is based on data from FightMatrix and is limited to athletes that are ranked in the top 15 in any of the "ten major MMA weight classes".<sup>307</sup>

206. In what follows, I explain in detail how Dr. Singer's definition of a relevant athlete market and calculations of Zuffa's market share are conceptually flawed.

**A. DR. SINGER'S "TRACKED", "HEADLINER", AND "RANKED" MEASURES DO NOT ACCOUNT FOR THE COMPETITIVE PRESSURE CREATED BY POTENTIAL ENTRY**

207. An important omission in Dr. Singer's assessment of market definition and market share is that it does not account for potential entry. Assessing the competitive pressure created by the possibility of entry is an important part of market definition and market share analysis, especially

---

<sup>302</sup> SINGER REPORT at ¶ 95. With respect to the input markets, Dr. Singer defines the relevant geographic market as North America. Although ONE Championship is outside of the relevant geographic market, Dr. Singer includes it in the "Ranked" measure of the relevant input market. (SINGER REPORT at ¶ 124.)

<sup>303</sup> SINGER REPORT at ¶ 99.

<sup>304</sup> SINGER REPORT at ¶ 108.

<sup>305</sup> This includes athletes ranked from 1 through 650 in any of the fourteen MMA weight classes in the FightMatrix database. (SINGER REPORT at ¶ 99.)

<sup>306</sup> SINGER REPORT at ¶ 99.

<sup>307</sup> SINGER REPORT at ¶¶ 99, 112. Dr. Singer's "Headliner" measure excludes athletes in the following divisions: men's strawweight, women's featherweight, women's flyweight, and women's atomweight. (SINGER REPORT at n. 268.)



## Highly Confidential Under Protective Order

in a marketplace like this one where barriers to entry are low.<sup>308</sup> All of Dr. Singer’s measures – “Tracked”, “Headliner”, and “Ranked” – only reflect existing athletes, and as such do not reflect the potential impact of entry. Ignoring potential entry is a fundamental flaw in any economic analysis such as this. Ignoring the possibility of entry biases Dr. Singer’s calculation of Zuffa’s share upward, all else equal.

**B. DR. SINGER’S “TRACKED” MEASURE OF THE RELEVANT INPUT MARKET IS NEITHER COMPREHENSIVE NOR CONSISTENT, BECAUSE FIGHTMETRIC DOES NOT INCLUDE ALL MAJOR MMA PROMOTERS, ONLY THOSE THAT THIRD PARTIES ARE WILLING TO PAY FOR**

[REDACTED]

[REDACTED]

[REDACTED] 10

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>308</sup> There is a large potential supply of athletes that a new promoter could employ, as MMA athletes have come from, among other places, collegiate or Olympic wrestling or boxing programs, martial art academies, the military, and other professional sports. (FERTITTA TR. at 128-130; FORT REPORT at ¶ 24; DICK REPORT at ¶ 47.). See also FERTITTA TR. at 123.

<sup>309</sup> SINGER REPORT at ¶ 99.

<sup>310</sup> GENAUER DECL. at ¶ 3, 6-7.

<sup>311</sup> GENAUER DECL. at ¶ 4, 5, 11.

<sup>312</sup> GENAUER DECL. at ¶ 6.

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]<sup>313</sup>

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>313</sup> GENAUER DECL. at ¶ 11.

<sup>314</sup> GENAUER DECL. at ¶ 8.

<sup>315</sup> Email exchange between Rami Genauer (FightMetric) and Augie Urschel (Economists Incorporated) (November 19, 2016).

## Highly Confidential Under Protective Order

**C. DR. SINGER’S “HEADLINER” MEASURE OF THE RELEVANT INPUT MARKET CONFLATES ATHLETES’ ABILITY WITH PROMOTER ACUMEN AND RAISES QUESTIONS ABOUT THE COMMONALITY OF THE PROPOSED CLASS**

213. Dr. Singer’s “Headliner” measure defines a market that includes only top-ranked (1 to 15) athletes. In doing so, Dr. Singer ignores the role that promoters play in developing and promoting athletes. All else equal, a promoter that is more adept at helping athletes develop into headliners will have a higher share of Dr. Singer’s “Headliner” market. In other words, like his other share metrics, the headliner measure conflates athlete ability with promoter acumen.

214. This is an important issue if promoters play a material role in developing athletes. To assess Zuffa’s role developing athletes, I conducted the analysis shown in Exhibit 25. To construct this table, I began by identifying “streaks” or sets of consecutive bouts that an athlete fought for Zuffa. I limited this set of streaks to ones in which the athlete was ranked within the Top 15 at some point during the streak (hereinafter, “Headliner Streaks”). The first column in Exhibit 25 shows the year in which the athlete was first ranked within the Top 15 during a Headliner Streak, and the second column shows the associated number of Headliner Streaks. The remaining columns reflect the rank of the athlete at the start of the Headliner Streak or at the start of their first-ever bout with Zuffa. As shown in the first row of the table, in 59 percent of the Headliner Streaks during the Class Period,<sup>316</sup> the athlete began the Streak with a rank outside of the Top 15. In fact, the average starting rank was 47.1. In other words, Zuffa has a strong history of helping athletes develop from a low rank into the Top 15. As such, Dr. Singer’s “Headliner” measure falsely labels as “foreclosure” the outcomes of Zuffa’s successful investments and promotion of athletes.

215. Furthermore, Dr. Singer’s “Headliner” measure excludes four weight classes in which Zuffa has not traditionally participated (men’s strawweight, women’s featherweight, women’s flyweight, and women’s atomweight). By excluding categories in which Zuffa does not participate but other promoters do, Dr. Singer artificially inflates Zuffa’s share of MMA

---

<sup>316</sup> Specifically, this refers to Headliner Streaks where the year in which the athlete was first ranked within the Top 15 was between December 16, 2010 and the present.

## Highly Confidential Under Protective Order

athletes.<sup>317</sup> Dr. Singer does not explain the reason for excluding athletes that are under contract with rivals.

216. Relatedly, the “Headliner” measure implies that top athletes are interchangeable across weight classes. This is not the case. For example, as Dr. Singer notes, a lightweight athlete cannot fight a heavyweight athlete.<sup>318</sup> Nor do promoters need top athletes in all weight classes to be competitive, as noted above.

217. Furthermore, Dr. Singer’s “Headliners” measure is an inaccurate representation of top athletes. Among the Zuffa athlete-events included in Dr. Singer’s “Headliners” measure during 2010-2016, 71 percent were not main event bouts. In addition, among Zuffa athlete-events that were main event bouts in 2010-2016, 22 percent were not included in Dr. Singer’s “Headliners” measure.<sup>319</sup>

218. Dr. Singer’s “Headliner” measure brings into question the commonality of the proposed class. In defining a “Headliner” measure of the relevant input market, Dr. Singer implicitly assumes that athletes ranked among the Top 15 are similar to each other in terms of professional capabilities and opportunities, but also that athletes ranked among the Top 15 are different from all other athletes in terms of professional capabilities and opportunities. During the Class Period, Dr. Singer’s “Headliner” measure excludes 4 of the 6 named plaintiffs and 78 percent of Zuffa athletes overall. (See Exhibits 26 and 27) As such, even if Dr. Singer’s “Headliner” measure were not flawed in the ways described above, Dr. Singer’s “Headliner” measure would raise fundamental questions about the commonality of the proposed class. Putting aside the many flaws in his “foreclosure” measure and its incorrect use in his regressions, any “impact” of Headliner share tells us nothing about impacts on other athlete types.

---

<sup>317</sup>SINGER REPORT at n. 268. Zuffa introduced a women’s featherweight division in December 2016. Zuffa has recently added a women’s flyweight weight class. Zuffa does not have a women’s atomweight or men’s strawweight class. [http://www.ufc.com/athlete/Weight\\_Class](http://www.ufc.com/athlete/Weight_Class); <http://www.ufc.com/news/UFC-208-introduces-women-featherweight-division-holm-derandamie-brooklyn>; <http://www.espn.com/espnw/sports/article/19345095/ufc-confirms-addition-women-flyweight-division>

<sup>318</sup> SINGER REPORT at ¶156, n. 401.

<sup>319</sup> SINGER BACKUP.



**B. REVENUE-WEIGHTED INPUT SHARES ARE FLAWED BECAUSE THEY DO NOT ACCOUNT FOR DIFFERENCES IN PROMOTERS' REVENUES THAT ARE ATTRIBUTABLE TO FACTORS UNRELATED TO ATHLETES**

96

Two horizontal bar charts showing the percentage of respondents by age group for two different groups. The top chart shows percentages for 18-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, and 85+. The bottom chart shows percentages for 18-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, and 85+. The x-axis for both charts ranges from 0 to 100%.

Age Group	Group 1 (%)	Group 2 (%)
18-24	100	100
25-34	100	100
35-44	100	100
45-54	100	100
55-64	100	100
65-74	100	100
75-84	100	100
85+	100	100

227. The conceptual flaw in Dr. Singer’s use of revenue-weighted input shares is further illustrated by the following implication: revenue-weighted input shares imply that firms with significant market power in the output market also have a significant share of the input market. According to Dr. Singer’s approach, if a firm has a high share of sales due to significant market

325 In explaining his calculation of foreclosure shares, Dr. Singer states “I consider a Fighter to be in the Relevant Input Market Athlete Pool if he or she participated in a Live MMA Event within nine or twelve months before or after the Live MMA Event in question.” (SINGER REPORT at ¶ 308) Consistent with this definition, Dr. Singer calculates foreclosure shares for use in his regression analyses using a nine month window before and after each event. But in calculating foreclosure shares for use in his market share analysis, Dr. Singer calculates foreclosure using a nine month window before (not after) each event. Adjusting Dr. Singer’s calculation to use a nine month window before and after each event has very little impact on Dr. Singer’s market share estimates. Thus to be consistent with Dr. Singer’s explanation and with his regression analyses, Exhibits 28 and 29 show Dr. Singer’s market share analysis using a nine month window before and after each event.

## Highly Confidential Under Protective Order

power in the output market, it will, by definition, have a large weight applied to its input measure. The large weight applied to its input measure will lead to an artificially inflated estimate of the firm's share of the input market. This will be true even if the firm operates in a highly competitive input market. This result is not supported by the economic literature, which recognizes that firms with significant market power and share in an output market can operate in, and have a small share of, a highly competitive input market.

**E. DR. SINGER'S RANK-WEIGHTED SHARE CALCULATION IS FLAWED**

228. As an alternative to revenue-weighting, Dr. Singer weights athletes by the inverse of their rank, using rank information from FightMatrix.<sup>326</sup> As discussed above, a regression employing reasonable weighting does not support Dr. Singer's conclusions. But Dr. Singer provides no basis for the assumption that an athlete's weight should be inversely proportional to his ranking. The following examples illustrate the problem.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>327</sup>

230. During the Class Period, 90 percent of Zuffa's events have featured an athlete at the top of the card (the most anticipated fight of the night) who was not ranked first or second in their respective division. Again, this suggests that rank is not a monotonic predictor of quality, contrary to what Dr. Singer assumes.<sup>328</sup> Those examples aside, however, his rank-weighted share calculation weights athletes inversely to their rank, so a top-ranked athlete accounts for five times the share of a fifth ranked athlete. This weighting is arbitrary and has no relation to the power to exclude competition in the market for MMA athletes.

---

<sup>326</sup> SINGER REPORT at ¶128. The rank-weighted approach is only used with the Headliners submarket.

<sup>327</sup> SINGER BACKUP.

<sup>328</sup> Calculations based on FightMatrix and Sherdog data from SINGER BACKUP. For 56.5 percent of Zuffa events during the Class Period, neither athlete at the top of the card was ranked first or second in his or her division.



## Highly Confidential Under Protective Order

**F. OTHER DEFICIENCIES IN DR. SINGER'S INPUT MARKET ASSESSMENT****1. Dr. Singer Miscalculates Athletes and His Assessment of Foreclosure Is Flawed**

231. In addition to the flaws noted above, Dr. Singer's share calculation is also flawed with regard to the count of athletes and the measurement of athlete foreclosure.

232. Dr. Singer's share calculation is the number of Zuffa athletes divided by the number of athletes in (alternatively) the "Tracked", "Ranked", or "Headliner" measures. In each month, Dr. Singer does not actually calculate unique athletes under contract with Zuffa or its competitors; instead, Dr. Singer counts the number of athletes who participated in a bout for a given promoter in an 18-month window around that month (i.e. in the 9 months before or after).<sup>329</sup> This implies that, for example, a Zuffa athlete may be counted more than once if he or she fought more than once in the 18-month window. Note also that a Bellator athlete would not be counted at all if he or she did not fight in the 18-month window. Further, an athlete who left Zuffa to fight for Bellator before the month in question, or athletes who retired or were cut by Zuffa before the month in question, will still be included in Zuffa's share provided they had a bout with Zuffa during the 18-month window.

[REDACTED]

<sup>329</sup> SINGER REPORT at ¶¶308-309. Dr. Singer also considers a 24-month window. SINGER REPORT at ¶¶308-309.

[REDACTED]

<sup>331</sup> SINGER BACKUP.

332 [REDACTED]

333

\_\_\_\_\_

\_\_\_\_\_

100

## Highly Confidential Under Protective Order

of the difference between Dr. Singer's original shares and the recalculated shares is due to Dr. Singer's use of revenue weights.<sup>336</sup>

## 2. Dr. Singer Improperly Excludes Other Combat Sports From His Input Market

236. Dr. Singer defines his market as limited to a certain set of MMA athletes and excludes other athletes from other combat sports.<sup>337</sup> The outer boundaries of a relevant market include all alternatives to which athletes could substitute in the event of a small but significant decrease in their compensation. Dr. Singer excludes other combat sports from the relevant market because MMA athletes "must be a master of multiple martial arts disciplines" to be successful.<sup>338</sup> But Dr. Singer has performed no economic analysis to support this market boundary.

## 3. Dr. Singer Fails to Properly Define the Geographic Market

[REDACTED]

---

analysis were to extend beyond November 2015, the number of Zuffa contracts in the sample with at least one month remaining would drop. Because this outcome is driven by missing information, I end my share analysis in November 2015.

<sup>336</sup> I have also looked at the recalculated share estimates by athlete rank and weight class. In almost every rank and weight class combination, the resulting shares are significantly lower than Dr. Singer's original revenue-weighted share calculation based on the "Ranked" metric.

<sup>337</sup> SINGER REPORT at ¶ 101.

<sup>338</sup> SINGER REPORT at ¶ 101.

<sup>339</sup> ONE Championship, "About One" *available at* <https://onefc.com/about-one/>.

Highly Confidential Under Protective Order

[REDACTED]  
[REDACTED]  
[REDACTED] 40

**XV. THERE IS NO DIRECT EVIDENCE THAT ZUFFA HAS MARKET POWER**

**A. ZUFFA DID NOT SUPPRESS ATHLETE COMPENSATION BELOW COMPETITIVE LEVELS**

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

---

<sup>340</sup> [REDACTED]

<sup>341</sup> SINGER REPORT at ¶ 143.

<sup>342</sup> SINGER REPORT at ¶¶ 144, 191-2.

<sup>343</sup> SINGER REPORT at ¶ 191

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[illegible]

<sup>346</sup> See ZFL-1560180, ZFL-2527749, ZFL-1069504; see also Marc Raimondi, “How will the UFC's Reebok deal change the landscape? Managers weigh in,” (December 9, 2014), available at <https://www.mmfighting.com/2014/12/9/7343449/how-will-the-ufcs-reebok-deal-change-the-landscape-managers-weigh-in> (“UFC president Dana White said during the press conference that the fighters would receive every last penny from the uniform deal.”); Teddy Montemayor and John Bieschke, “How the UFC and Reebok Changed the Sponsorship Landscape in MMA,” *MMA Newsline* (January 9, 2017), available at <http://www.mmanewslines.com/how-ufc-and-reebok-changed-sponsorship-landscape-in-mma/>.

## Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

243. Dr. Singer's second claim is that if athletes who receive less total compensation are not leaving UFC for other promoters. However, that claim is also unsupported by the evidence. As discussed in various articles, there have been athletes (including highly ranked athletes) who have left UFC for competing promoters in part because of reduced sponsorship revenue.<sup>348</sup> Lawrence Epstein, the chief operating officer of UFC, testified that athletes take sponsorship payments into consideration when they decide whether to fight for UFC or a competitor.<sup>349</sup> Thus, these sponsorship programs provide no direct evidence of Zuffa's market power.

---

<sup>347</sup> 30(b)(6) Deposition of Zuffa, LLC by Ike Lawrence Epstein (July 21, 2017) [hereinafter EPSTEIN SPONSORS TR.] at 284-85; Ben Fowlkes, "The Truth About Fighters and Sponsors," (September 13, 2011), *available at* <https://www.mmafighting.com/2011/09/13/the-truth-about-fighters-and-sponsors>.

<sup>348</sup> Mike Chiappetta, "The Grass Is Greener: UFC-to-Bellator Signees Speak Out," *Bleacher Report* (April 5, 2016), *available at* <http://bleacherreport.com/articles/2630256-the-grass-is-greener-ufc-to-bellator-signees-speak-out> ("Over the last 12 months, the movement of fighters from UFC to Bellator has not been a full exodus, but it may well qualify as a movement. Aside from Mitrione, Phil Davis, Josh Thomson and Benson Henderson are among the big names ranked within the Top 15 of their respective divisions who have bolted the Octagon for what they hope will be greener pastures, making free agency one of the key stories of 2016. The motivations behind the shifting attitude are multitudinous. From sponsorship money losses in the wake of the Reebok deal to contract-exclusivity concerns to simple economics to athlete treatment, more and more competitors are citing reasons to fight out their contracts and test the market....Several fighters cited the restrictive sponsorship deal signed between the UFC and Reebok as a factor in their decisions to test the market."); "How the UFC and Reebok Changed the Sponsorship Landscape in MMA," *supra* note **Error! Bookmark not defined.** ("With many unsatisfied fighters looking for a way to keep competing while simultaneously not losing out on sponsorship money, Bellator became the perfect option. Light heavyweight veteran Phil Davis was one of the first to jump from the UFC to Bellator, because of the latter's Viacom-backed contract that allows third party sponsorship. Simply put, Bellator proved to be the more lucrative option. Other fighters quickly followed suit once they became free agents.")

<sup>349</sup> EPSTEIN SPONSORS TR. at 307-10.

[illegible]

245. [REDACTED]

[REDACTED]

[REDACTED] [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED]

[REDACTED]

[REDACTED]

<sup>355</sup> J. SILVA TR. at 229-30; ZFL-0753823; ZFL-0415638; ZFL-0753136.

Highly Confidential Under Protective Order

**C. ZUFFA’S PPV PRICE INCREASES WERE NOT ANTICOMPETITIVE, AND ZUFFA DID NOT RESTRICT THE SUPPLY OF PPV OR LIVE EVENTS**

246. Dr. Singer also claims that during the class period, Zuffa used its market power in the output market to inflate the price of live MMA events and restrict the output of live MMA events. These claims are incorrect.

## 1. Zuffa Did Not Increase PPV Prices and the Decline in PPV Viewership Is Unrelated to the Challenged Conduct

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[illegible]

<sup>356</sup> SINGER REPORT at ¶ 201.

<sup>357</sup> Deposition of Marshall Zelaznik (February 8, 2017) at 22-23.



359

62.

358 SINGER BACKUP.

<sup>359</sup> BATCHVAROVA TR. at 201.

<sup>360</sup> CPI Detailed Reports downloaded from <https://www.bls.gov/cpi/tables/detailed-reports/home.htm>. The Bureau of Labor Statistics calculates a consumer price index (CPI) by expenditure category to track how prices throughout the United States economy are changing. Prices for “Cable and Satellite television services” increased by 17 percent between August 2008 and August 2015.

<sup>362</sup> Prices for “Admission to Sporting Events” and “Admission to Movies, Theaters, and Concerts” increased by 23 and 11 percent.

<sup>365</sup> WME-ZUFFA-00001150 at 9.

## Highly Confidential Under Protective Order

## 2. Zuffa's Conduct Did Not Lead to a Decrease in the Total Supply of Live MMA Events

252. Dr. Singer also claims that Zuffa's Challenged Conduct led to a decrease in the total supply of live MMA events produced by Zuffa and rival promoters during the class period.<sup>369</sup> Below, I first describe how Dr. Singer reaches his conclusion. Then I explain why Dr. Singer's evidence is misleading and the conclusions he draws from this evidence are incorrect.

253. Dr. Singer's purported decreases in the supply of live events that are a consequence of Zuffa's Challenged Conduct are displayed in figures 4A-C of his report. The three figures report the number of observed MMA events that include athletes in his Tracked, Ranked, and Headliner input markets, respectively.<sup>370</sup> To calculate how many events would have been produced but for Zuffa's challenged conduct, Dr. Singer uses a linear regression to estimate the trend in live events between 2001 and 2010. He then uses this estimated trend to forecast how many events would have been produced during the class period if the 2001-2010 trend had persisted. Dr. Singer claims, for example, that absent the Challenged Conduct there would have been approximately 1800 events in 2016 featuring athletes in his Ranked input market instead of 657.<sup>371</sup> Of course there is no reason why a more mature market that existed after 2010 would grow at the same high rate as when the market was just starting out, and Dr. Singer makes no attempt to defend this assumption.

254. Dr. Singer's approach reliably measures the effect of Zuffa's Challenged Conduct on the supply of live MMA events only if the Challenged Conduct is the only reason Zuffa produced fewer events than Dr. Singer forecasts using the 2001-2010 trend. This is clearly not the case. Dr. Singer uses information on the number of events produced from as early as 2001 when the MMA industry was still in its infancy.<sup>372</sup> The growth in events that Dr. Singer documents between

---

<sup>369</sup> SINGER REPORT at § III.D.5.

<sup>370</sup> Dr. Singer includes an event in Figure 4A if the event included at least one athlete who was a part of Dr. Singer's Tracked input market. He uses an analogous approach to count the number of live events within his Ranked and Headliner markets in Figures 4B and 4C.

<sup>371</sup> SINGER BACKUP.

<sup>372</sup> SINGER REPORT at ¶¶ 23-24; SINGER BACKUP. In 2001 UFC was purchased for only \$2 million and in 2016 was worth approximately \$4 billion. Dr. Singer describes UFC as "privately owned and operated by a small group of individuals 2001." However, it was still one of the largest MMA promoters at that time. In 2001, the only promoter

## Highly Confidential Under Protective Order

2001 and 2010 occurred as the MMA industry was evolving into a mature industry. To assume that this growth would persist beyond 2010 is analogous to assuming children grow as much between their tenth and twentieth birthdays as between birth and their tenth birthdays.

255. I use results from Dr. Singer's Figure 4B to demonstrate that his approach generates unrealistic and therefore, unreliable, predictions. In 2016, there were approximately 9 bouts in each of the 616 events that Zuffa's rivals produced and were included in Dr. Singer's Ranked market. Dr. Singer predicts that these same promoters would have produced an additional 1,137 events if the trend from 2001 to 2010 persisted into the class period. But it is very unlikely Zuffa's rivals would have been able to find athletes to participate in these additional events, especially under Dr. Singer's assumptions that the supply of athletes with MMA skills is severely limited. If these 1,137 events had taken place and were similar to the 616 events that did take place, Zuffa's rivals would have needed to find athletes to participate in more than 10,000 additional bouts. Even if Zuffa's rivals had access to every single athlete Dr. Singer included in his Ranked input market in 2016 (approximately 2,500 athletes), each of these athletes would have needed to participate in 8.5 additional bouts in order fill the fight cards in these additional 1,137 events. Since athletes in Dr. Singer's Ranked input market typically fight in only two bouts per year, it is not realistic to think Zuffa's rivals would have been able to actually produce the additional events Dr. Singer says would have occurred absent the Challenged Conduct. And if they could, Dr. Singer's calculations imply that his input market definition is completely wrong – Zuffa's share of the supply of athletes available to MMA promoters is much lower than his "foreclosure share" calculations imply.

256. The unrealistic predictions Dr. Singer generates from his approach underscores how unreliable it is.<sup>373</sup> Nowhere does Dr. Singer establish a causal relationship between Zuffa's Challenged Conduct and the supply of MMA events produced during the class period. Instead, Dr. Singer defines a benchmark and then attributes any differences between the number of events

---

within Dr. Singer's Tracked input market that held more events than UFC was Pride. Pride held 6 events, one more than UFC.

<sup>373</sup> The supply reductions Dr. Singer displays in Figures 4A and 4C rely on the same methodology as in Figure 4B. Since the methodology underlying 4B generates unrealistic predictions, I conclude that the predictions Dr. Singer makes in Figures 4A and 4C are also unreliable.

## Highly Confidential Under Protective Order

produced during the class period and the number of events implied by the 2001-2010 trend to Zuffa's Challenged Conduct. Since there are differences between the class period and Dr. Singer's benchmark period unrelated to Zuffa's Challenged Conduct, it is incumbent on Dr. Singer to decompose differences between the 2001-2010 trend and observed supply into portions related and unrelated to Zuffa's Challenged Conduct. Since he has not, his conclusion that Zuffa's Challenged Conduct reduced supply is merely an unsupported and implausible assertion.

257. In Exhibit 30 I estimate total attendance at the events Dr. Singer includes in his Figure 4A. In 2010, total attendance at the 73 events with athletes from Dr. Singer's Tracked market was approximately 650 thousand.<sup>374,375</sup> Two years later in 2012, total attendance was approximately the same (625 thousand), despite there being only 62 events. This is because Zuffa produced more events in 2012 than 2010 (36 instead of 32) and Zuffa events attracted larger audiences than their rivals. Overall, average yearly attendance at MMA events produced between 2011 and 2016 was 629 thousand. This level of attendance is slightly lower than one year prior to the class period (648 thousand) and slightly higher than two years prior to the class period (618 thousand).<sup>376</sup>



<sup>374</sup> To calculate total live attendance, I rely on the same MMA Payout data that Dr. Singer uses to calculate the revenue weights that enter his foreclosure shares. I identify which events in the MMA Payout data include athletes in Dr. Singer's tracked market. For this set of events, I then calculate yearly average attendance at Zuffa events and events produced by Zuffa's rivals. I then apply these yearly averages to each of the events that Dr. Singer includes in his Figure 4A.

<sup>375</sup> The exhibit does not report total attendance for the years 2001 through 2005 because the MMA Payout data does not contain data from these years.

<sup>376</sup> Total attendance at MMA events during the class period was substantially higher than attendance between 2006 and 2009, during which attendance varied between 461 thousand and 618 thousand. But as I have previously discussed, the years immediately prior the class period are more appropriate benchmarks for the class period than earlier years.

## Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**D. THERE IS NO EVIDENCE THAT ZUFFA HAD THE POWER TO EXCLUDE RIVALS**

259. Dr. Singer states that Zuffa's alleged power to exclude rivals is direct evidence of market power. As explained in Section IV, Zuffa has not excluded rivals and indeed has faced and continues to face vigorous competition in the marketplace. Moreover, as described in Section IV, the barriers for MMA promoters to enter the market are low, thus negating any ability for Zuffa to exclude rivals.

[REDACTED]

<sup>378</sup> I use Nielsen data provided by Zuffa to measure total TV viewership between 2005 and 2016. It is my understanding that these data include all MMA telecasts that were aired on networks tracked by Nielsen. The Nielsen data includes events promoted by USF, Strikeforce, WEC, Bellator, EliteXC, International Fighting League, World Series of Fighting, and BODOG. I exclude IFL, WSOF, and BODOG viewership from the data as these promoters are not included in Dr. Singer's Tracked input market.

<sup>379</sup> The PPV viewership data only includes Zuffa residential PPV buys. It is my understanding that rival promoters rarely made their events available on PPV.

### A. DR. SINGER DOES NOT UNDERSTAND AND MISCHARACTERIZES ZUFFA’S COMPENSATION STRUCTURE

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Country	Number of Vaccinated People
1	1,000,000
2	900,000
3	800,000
4	700,000
5	600,000
6	500,000
7	400,000
8	300,000
9	200,000
10	100,000
11	50,000
12	383

<sup>383</sup> SINGER REPORT at ¶221.

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

---

<sup>384</sup> ZFL-0895315.

[REDACTED]

<sup>386</sup> EPSTEIN COMPENSATION TR. at 29-32.



Highly Confidential Under Protective Order

[REDACTED]

**B. DR. SINGER'S REGRESSION OF ATHLETES' COMPENSATION ON OTHER ATHLETES' COMPENSATION IS ALSO FLAWED AND PROVIDES NO EVIDENCE OF A COMMON COMPENSATION STRUCTURE**

[REDACTED]

[REDACTED]

<sup>390</sup> EPSTEIN COMPENSATION TR. at 33-34.

<sup>391</sup> EPSTEIN COMPENSATION TR. at 69.

<sup>392</sup> SINGER REPORT at ¶228.

## Highly Confidential Under Protective Order

[REDACTED]

267. Dr. Singer's regressions provide no evidence of a compensation structure or common impact from the alleged bad acts. There are many reasons why the compensation of athletes would be correlated that are unrelated to a compensation structure, just as the earnings of any other individuals working in the same profession or for the same employer are likely correlated. However, even accepting Dr. Singer's premise that the only explanation for the correlation between own and others' compensation in his regression is a compensation structure, I show that after correcting key flaws in Dr. Singer's analysis, his regression provides no evidence whatsoever of a compensation structure or that any harm from the Challenged Conduct would have been broadly shared across all members of the Bout Class.

[REDACTED]

---

<sup>393</sup> SINGER REPORT at ¶229.

<sup>394</sup> I include 2010 in the regression to be conservative since the Class period does include the last two weeks of 2010. When 2010 is excluded from the regression model, the results do not change.

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

---

[REDACTED] SINGER REPORT at ¶229.

<sup>396</sup> When 2010 is excluded from the regression model, the results do not change.

Highly Confidential Under Protective Order

**C. DR. SINGER'S REGRESSION OF COMPENSATION ON COMMON FACTORS  
OVERSTATES THE FRACTION OF COMPENSATION EXPLAINED BY COMMON  
FACTORS**

[REDACTED]

**D. DR. SINGER DOES NOT DEMONSTRATE COMMON IMPACT ON THE IDENTITY  
CLASS**

273. Dr. Singer does not demonstrate common impact for either Subgroup within the Identity Class. As I explained in VII.C, Dr. Singer measures damages to Subgroup One within the Identity Class using his regression model of compensation as a share of revenue on his measure of foreclosure. When I correct Dr. Singer's regression model, there is not a negative relationship between compensation and Dr. Singer's measure of foreclosure. Therefore, Dr. Singer has no basis to argue any members of Subgroup One within the Identity Class were harmed by the Challenged Conduct.

[REDACTED]

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

---

<sup>399</sup> SINGER REPORT at ¶¶ 238-239

<sup>400</sup> SINGER REPORT at ¶ 239

<sup>401</sup> HENDRICK CONTRACTS Tr., Ex. 2 at 37.

<sup>402</sup> ZFL-1056348.

Highly Confidential Under Protective Order

**XVII. DR. SINGER'S DAMAGES CALCULATIONS ARE IRRETRIEVABLY FLAWED**

276. The damages calculations in Dr. Singer's report build upon his foreclosure analysis. Although he presents several variations with different inputs and results, the core methodology is the same: compute what the revenue share paid by Zuffa to athletes would be if the foreclosure percentage were lower, and then multiply actual Zuffa revenues by the difference in revenue share to compute how much more athletes would have earned absent Zuffa's high foreclosure share.

[REDACTED]

**A. DR. SINGER ARBITRARILY CHOOSES A FORECLOSURE SHARE THAT GENERATES AN ARBITRARY BUT-FOR COMPENSATION LEVEL**

278. As discussed in Section X, the foreclosure shares used in Dr. Singer's regression benchmark are based on an arbitrary 30-month rule that has no basis in any economic analysis of foreclosure impact. Moreover, the foreclosure share in the but-for world is based on an arbitrary assumption about the contracts that would prevail in a competitive marketplace. He provides no analysis of the impact of removing the challenged contractual provisions on athlete mobility that accounts for the legitimate and procompetitive investments that Zuffa has made in its product,

---

<sup>403</sup> SINGER REPORT at ¶ 246.

## Highly Confidential Under Protective Order

and which would not change in the proper but-for world. Dr. Singer bases his estimate of damages on an arbitrary projection of changes in foreclosure share, rather than a proper comparison between the current marketplace and how the marketplace would change in the but-for world.

**B. DR. SINGER DOES NOT AND CANNOT DIRECTLY MEASURE DAMAGES FOR ALL CLASS MEMBERS**

279. A second fundamental problem with Dr. Singer's damages calculations is that none of these calculations is able to directly measure harm to each member of the proposed class. For example, as I discussed in Section VII Dr. Singer uses the relationship between athlete compensation as a share of revenue and his foreclosure share to calculate damages to members of the Bout class. Dr. Singer's regression model, however, is not designed to measure whether each Bout class member suffered damages. Rather, Dr. Singer uses his regression model to measure an average correlation between his flawed measures of foreclosure and athlete compensation across all athletes and bouts in his data. He then uses this average correlation to calculate the average underpayment (measured as a percentage of event revenue) for athletes within the Bout class, and applies that underpayment to an estimate of total event revenue during the Class Period. But nowhere does Dr. Singer examine whether any particular athlete's compensation was lower when his measures of foreclosure were higher.

[REDACTED]

[REDACTED]

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



### C. REVENUE SHARE IS THE WRONG MEASURE OF ATHLETE COMPENSATION

285. Consequently, there is no theoretical or empirical foundation for the damages computed by Dr. Singer.

Highly Confidential Under Protective Order

**1. There Are No Damages Using the Proper Measure of Athlete Compensation**

286. Although Dr. Singer's damage estimates are fatally flawed because they all are based on athlete revenue share, one can adapt the methodology using the correct measure of athlete compensation, which is simply the level of compensation. This requires comparing the compensation actually paid by Zuffa with the compensation that would be paid by an MMA promoter that does not exercise monopsony power, which, following Dr. Singer, I will refer to as a competitive benchmark. Using any of the natural candidates for a competitive benchmark and following Dr. Singer's methodology, there are no estimated damages.

[REDACTED]

[REDACTED]

---

<sup>407</sup> WME-ZUFFA-00013978, quoted in SINGER REPORT at ¶159.

Highly Confidential Under Protective Order

[REDACTED]

[REDACTED]

**D. THERE IS NO BASIS FOR DR. SINGER'S CALCULATION OF DAMAGES FOR THE IDENTITY CLASS**

289. In Sections VII.C and XVI.D, I explained why Dr. Singer's approach to measuring damages for the Identity Class are not valid.

290. To measure damages to Identity Subgroup One, Dr. Singer uses his regression of athlete compensation as a share of revenue on his measure of foreclosure to measure damages. Since Dr. Singer's regression model does generate a negative correlation between compensation and Dr. Singer's measure of foreclosure after I correct his model, Dr. Singer has no basis to assign damages to Subgroup One.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**XVIII. OTHER ARGUMENTS DR. SINGER MAKES ARE UNSUPPORTED BY THE EVIDENCE**

**A. LOAS ARE USED AT THE REQUEST OF ATHLETES, NOT AS A BASIS TO HIDE COMPENSATION**

[REDACTED]

[REDACTED]

[REDACTED]

---

<sup>408</sup> ZFL-0899290

<sup>409</sup> SINGER REPORT at ¶ 33.

## B. COUNTER-PROGRAMMING IS PROCOMPETITIVE AND INCREASES THE OPTIONS FOR CONSUMERS

\_\_\_\_\_

□ [REDACTED]

<sup>414</sup> SINGER REPORT at ¶¶ 52-58.

## Highly Confidential Under Protective Order

294. Testimony from several witnesses supports the conclusion that counter-programming provides consumers with more choice as to which MMA program to watch.<sup>415</sup> In addition, putting two MMA events on in the same time slot “actually provides more opportunity for more events and more product out there for the fans. You’re giving more opportunities, more consumer choice.”<sup>416</sup>

295. It can also increase the number of consumers with access to MMA content. This is particularly true where one promotion offers a Pay-Per-View event and another promoter offers an event on cable or network TV, since some consumers cannot afford a pay option. Counter-programming can also increase the audience for each promoter because they are complements, not substitutes: “when you put content on two different channels around the same time, people flip back and forth, and that's good for both properties.”<sup>417</sup> Further, in the age of digital video recorders (DVRs), which spans the class period,<sup>418</sup> consumers can choose to watch two MMA events that were scheduled for the same time slot.<sup>419</sup> DVRs are ubiquitous and have dramatically changed consumers’ consumption of broadcast television, as reflected in the change of the Nielsen ratings to include DVR viewing statistics.<sup>420</sup>

296. Other MMA promoters and networks have also counter-programmed against Zuffa events.<sup>421</sup> The UFC also faces counterprogramming from other sports entertainment programs,

---

<sup>415</sup> EPSTEIN TR. at 297 (“there’s a lot of strong arguments that this creates an MMA night where people can watch a ton of MMA in one night.”)

<sup>416</sup> HENDRICK TR. at 162.

<sup>417</sup> EPSTEIN TR. at 297.

<sup>418</sup> TiVo, History (accessed Oct. 24, 2017), <https://www.tivo.com/history> (the first DVR to ever exist, TiVo, shipped by March 31, 1999).

<sup>419</sup> HENDRICK TR. at 161 (“That's actually also not true with the DVR world these days. What Nielsen ratings look at is not just who is watching live, they look at, I'm sure you're aware, DVR numbers. So if you're trying to say that one person can only watch one channel at one time, that's just not the way the world is anymore.”)

<sup>420</sup> Brian Stelter, “As DVRs Shift TV Habits, Ratings Calculations Follow,” *New York Times* (Oct. 6, 2013), available at <http://www.nytimes.com/2013/10/07/business/media/dvrs-shift-tv-habits-and-ratings.html> (explaining a change in the Nielsen ratings to include DVR time-shifted programming and that “[o]n-demand viewing behaviors, which have been reshaping television since the first TiVo DVR was shipped in 1999, are becoming more pronounced with each passing year.”)

<sup>421</sup> EPSTEIN ACQUISITIONS TR. at 203-204 (discussing counter-programming by Spike TV of taped UFC programming); KNAPP TR. AT 153; “Spike TV Continues UFC Counter Attack Tactics with ‘Unleashed: Diego

“[C]ounterprogramming to me means what we do every single day, trying to compete for the attention of the consumer that's being bombarded with everything from competing television products in the sports category to entertainment to movies to video games to YouTube videos, and the list goes on and on.”<sup>423</sup> Former UFC Chief Legal Officer Kirk Hendrick testified, when asked to define counterprogramming, “I said I'd heard of it before in entertainment programming. Providing more programming for the viewing public, I've heard of that.”<sup>424</sup>

427

<sup>425</sup> SINGER REPORT at ¶ 54.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

128

## Highly Confidential Under Protective Order

298. Dr. Singer admits that counter-programming does not have the effect of foreclosing the market for MMA athletes in his model, and that, even with counter-programming by Zuffa, in the absence of 30-month athlete contracts, his model would show no foreclosure.<sup>428</sup> As a result, Dr. Singer's model does not (and cannot) show any anti-competitive effects from counter-programming.

**C. ZUFFA DID NOT USE LITIGATION AS A TOOL TO STIFLE COMPETITION**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>430</sup>

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>434</sup>

---

<sup>428</sup> SINGER TR. at 254-255.

<sup>429</sup> SINGER REPORT at ¶ 59.

<sup>430</sup> LEPLAINTIFFS-0002247.

<sup>431</sup> ZFL-2677499 at 7501-7502.

<sup>432</sup> LEPLAINTIFFS-0002247 at 2275-76.

<sup>433</sup> ZFL-2677499 at 7501.

<sup>434</sup> LEPLAINTIFFS-0002247 at 2279-280.

## Highly Confidential Under Protective Order

**D. NON-COMPETE AGREEMENTS DID NOT AFFECT ZUFFA’S COMPETITION IN THE MARKETPLACE**

301. Dr. Singer claims that Zuffa improperly entered into non-compete agreements with other MMA promoters and that such agreements are horizontal agreements in restraint of trade.<sup>435</sup> In reaching that conclusion, Dr. Singer cites to § 2.2 of the FTC’s Antitrust Guidelines for Collaborations Among Competitors. In my opinion, Dr. Singer’s reliance on these guidelines in these circumstances is misplaced, and I conclude that Zuffa’s non-compete agreements did not affect competition.

[REDACTED]

[REDACTED]

---

<sup>435</sup> SINGER REPORT at ¶¶ 40, 62-63.

<sup>436</sup> SINGER REPORT at n. 105.

<sup>437</sup> EPSTEIN ACQUISITIONS TR. at 71-72.

[REDACTED]

<sup>439</sup> Federal Trade Commission, “Market Division or Customer Allocation”, <https://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws/dealings-competitors/market-division-or>.

<sup>440</sup> ZFL-1240584 at 0590.



Highly Confidential Under Protective Order

[REDACTED] [REDACTED]  
[REDACTED] 442

[REDACTED] [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] 46

305. [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

---

<sup>441</sup> EPSTEIN ACQUISITIONS TR. at 48-49.

<sup>442</sup> ZFL-1240584 at 0589; EPSTEIN ACQUISITIONS TR. at 31, 49.

<sup>443</sup> SINGER REPORT at ¶ 43.

<sup>444</sup> EPSTEIN ACQUISITIONS TR. at 88-92.

<sup>445</sup> ZFL-0864885 at 4887; EPSTEIN ACQUISITIONS TR. at 18-19.


<sup>446</sup> ZFL-0000064 at 079.

<sup>447</sup> SINGER REPORT at ¶ 62.

<sup>448</sup> Deposition of Andrew Simon (July 19, 2017) [hereinafter SIMON TR.] at 281-282; 289.

<sup>449</sup> SIMON TR. at 317.

## XIX. CONCLUSION

  
Robert H. Topel, Ph.D.  
October 27, 2017

132

## Highly Confidential Under Protective Order

**APPENDIX A: AN ECONOMIC MODEL OF COMPARATIVE ADVANTAGE IN PROMOTING FIGHTS**

308. The regression estimates Dr. Singer reports in Section III.D.1 of his report show a negative relationship between his measure of purported foreclosure—the share of MMA athletes under contract with Zuffa—and an athlete’s pay as a share of event revenue. In other words he finds that as Zuffa’s share of MMA athletes under contract increased, athletes’ pay as a fraction of event revenue declined. Dr. Singer interprets this negative relationship as evidence of anticompetitive impact—*i.e.*, that Zuffa exercised monopsony power in the market for MMA athletes, reducing their pay. Dr. Singer also bases some of his calculations of harm to athletes on this negative relationship.

309. Let  $y(i, t)$  denote the pay of athlete  $i$  as a share of event revenue at date  $t$ . Let  $Z(t)$  denote the share of MMA athletes under contract with Zuffa at date  $t$ . The theoretical foundation for Dr. Singer’s regression is his assertion that a negative relationship between  $y(i, t)$  and  $Z(t)$  demonstrates the exercise of monopsony power. As a matter of basic economics, this assertion is simply false. A negative relationship between  $y(i, t)$  and  $Z(t)$  is an implication of successful competition on the merits by Zuffa, even if it is impossible for Zuffa to obtain or exercise monopsony (or monopoly) power. Further, even assuming that, for the sake of argument, Zuffa were to obtain and exercise monopsony power, economic theory does not predict that athlete compensation as a share of event revenue declines as monopsony power rises. These facts mean that Dr. Singer’s regression evidence is meaningless for the purposes demonstrating or measuring anticompetitive harm—he would “find” his negative relationship even if such harm could not (and did not) occur.

310. Zuffa claims that its success is the result of competing on the merits, producing a superior product and attracting the best talent. So assume that Zuffa became progressively better than its competition at promoting fights, advertising, and developing athletes’ skills. If the labor market were perfectly competitive, economic theory would predict that athlete compensation would remain constant, Zuffa’s share of all MMA athletes would rise, and Zuffa’s revenue per event would increase. Therefore, athletes’ compensation as a share of event revenue,  $y(i, t)$ , would decrease while the percentage of all MMA athletes that are under contract to Zuffa,  $Z(t)$ , would rise. This is precisely what Dr. Singer’s regression finds, yet it has nothing to do with

## Highly Confidential Under Protective Order

monopsony power—it is the outcome of Zuffa’s procompetitive success. This would happen even if the market were perfectly competitive, and even if no promoter had market power in the Input or Output Markets.

311. To see this, consider an economic model with two firms where neither firm has market power in the product market or in the labor market. Let  $L_1$  be the number of athletes employed by Zuffa and  $L_2$  be the number of athletes employed by the competitor promoter. Let  $a$  be the relative quality of Zuffa athletes, which Zuffa can increase by incurring a cost according to the cost function  $c(a)$ . In other words, Zuffa is better than its competitor at making its athletes more effective revenue-generators, but is only able to do so by incurring some cost.

312. Assume that labor supply is perfectly elastic, which implies that the labor market is competitive and neither Zuffa nor its competitor is a monopsonist. Further, assume that demand for MMA events and products are perfectly elastic, which implies that the product market is perfectly competitive and neither Zuffa nor its competitor has market power in the product market.

313. The two firms will earn profits according to the following two equations:

$$\text{Profit}_1 = pF(aL_1) - wL_1 - c(a)$$

$$\text{Profit}_2 = pF(L_2) - wL_2$$

where  $F(\cdot)$  is a production function that describes how the two firms generate output based on their inputs.

314. This economic model makes three predictions as Zuffa gets better at promoting fights and developing athletes. First, Dr. Singer’s measured foreclosure share,  $Z(t)$ , increases. Second, athletes’ wages,  $w$ , are unchanged. Third, athletes’ pay as a share of Zuffa’s revenue decreases. The intuition is that as Zuffa gets better at promoting fights and developing athletes, it produces a better product and generates more revenue. When this happens, athletes’ pay does not increase precisely because the labor market is competitive; in a competitive labor market, a worker’s wage is determined by his second-best opportunity and that does not change as Zuffa becomes better at promoting events. Finally, the increased revenue goes to Zuffa because Zuffa has the

## Highly Confidential Under Protective Order

scarce skills that generate the revenue (in this case the skills to increase  $a$  in a way that its competitor cannot).<sup>455</sup>

315. The upshot of this economic model is that Dr. Singer's finding of a negative relationship between compensation as a share of revenue ( $y(i, t)$ ) and the share of MMA athletes under contract with Zuffa ( $Z(t)$ ) is exactly what would occur if Zuffa's success is the result of competing on the merits, producing a superior product because Zuffa has a comparative advantage in producing good fights and athletes. This relationship will occur even if Zuffa has no market power in either the product or labor market. Therefore, the regression Dr. Singer presents in Section III.D.1 is completely uninformative regarding whether Zuffa has exercised market power in either the product or labor market, or whether MMA athletes were harmed by the Challenged Conduct. Furthermore, this simple model demonstrates that this negative relationship would result from actions by Zuffa that benefit customers—creating a better product that customers value.

---

<sup>455</sup> Assume for example that the production and cost functions both have a constant elasticity, so that  $F_1 = \frac{(aL_1)^{1-b}}{(1-b)}$ ;  $F_2 = \frac{L_2^{1-b}}{(1-b)}$ ;  $c(a) = \frac{k}{1+e} a^{1+e}$ . As  $k$  declines, Zuffa becomes better at promoting events and developing high-quality athletes, and chooses to do so. Dr. Singer's measure of the foreclosed share would be  $Z = \frac{aL_1}{aL_1 + L_2} = \frac{a^{1+b}}{1+a^{1+b}}$ , which increases as  $a$  increases (*i.e.*, Dr. Singer's measured foreclosure share increases as Zuffa becomes better at promoting fights). The wage is unaffected by a change in  $k$  or a change in  $a$  because the labor market is competitive. And, the ratio of athlete pay to Zuffa's revenue is equal to  $\frac{w}{Revenue_1} = \left(\frac{Z}{1-Z}\right)^{b-1} \frac{w^{1/(b-2)}}{p}$ , which declines as the foreclosure share  $Z$  increases because  $b < 1$ .

**APPENDIX B: CURRICULUM VITAE**

# **Robert H. Topel**

## **CURRICULUM VITAE**

**August 2017**

### **CURRENT POSITIONS**

*Isidore Brown and Gladys J. Brown Distinguished Service Professor of Economics,*  
Booth School of Business, The University of Chicago  
*Director, George J. Stigler Center for the Study of the Economy and the State*  
*Co-Director, Energy Policy Institute at Chicago (EPIC)*  
*Research Associate, National Bureau of Economic Research*

### **EDUCATION**

B.A. (with High Honors), University of California, Santa Barbara, 1974  
Ph.D., University of California, Los Angeles, 1980

### **FIELDS OF SPECIALIZATION**

Microeconomics, Labor Economics, Industrial Organization, Health Economics,  
Economic Policy, Energy Economics, National Security Economics

### **PREVIOUS ACADEMIC POSITIONS**

*Professor of Economics, Graduate School of Business, University of Chicago, 1986-93*  
*Kirby Distinguished Visiting Professor of Economics, Texas A&M University, 2006*  
*Professor of Economics, Department of Economics, University of California, Los Angeles, 1986*  
*Associate Professor of Economics, Department of Economics, University of California, Los Angeles, 1985-86*  
*Associate Professor of Economics, Graduate School of Business, University of Chicago, 1983-85*  
*Assistant Professor of Economics, Department of Economics, University of Chicago, 1980-83*

### **OTHER AFFILIATIONS**

*Research Associate, National Bureau of Economic Research, 1984-present*  
*Senior Fellow, the Milken Institute, 1999-present*  
*Faculty Member, MacLean Center for Clinical Medical Ethics, The University of Chicago*  
*Member, National Petroleum Council Taskforce on Transportation Fuels Supply and Infrastructure, 2010-2012*  
*Fellow, Center for the Study of Poverty and Inequality, Stanford University, 2006-present*

*Member*, Brookings Panel on Economic Activity, various years  
*Visiting Scholar*, Board of Governors of the Federal Reserve, 1990  
*Research Associate*, Economics Research Center, NORC, 1980—1990  
*Consulting Economist*, The Rand Corporation, 1982—1989  
*Research Associate*, Center for the Study of the Economy and the State, 1980—present  
*Faculty Research Fellow*, National Bureau of Economic Research, 1981-83  
*Research Economist*, Unicon Corporation, 1981-88  
*Consultant*, U.S. Department of Labor, 1985-90  
*Partner*, Chicago Partners LLC 1994-2008  
*Principal & Managing Director*, Navigant Economics, 2008-2013  
*Board of Directors*, Ingalls Hospitals and Ingalls Health Service, 2000-2012  
*Director*, WGA Evans Scholars Foundation, 2011-present  
*Senior Consultant*, Charles River Associates, 2013-present

## **EDITORIAL POSITIONS**

Editor, *Journal of Political Economy*, 1993-2003  
Board of Editors, *American Economic Review*, 1992-94  
Associate Editor, *Journal of Labor Economics*, 1982-92  
Editorial Board, *International Journal of the Economics of Business*, 1993-present  
Member of the Advisory Board, ERN Labor Journals, 1998-present

## **HONORS & AWARDS**

*Kenneth J. Arrow Award*, International Health Economics Association, 2007  
*Kirby Distinguished Visiting Professor*, Texas A&M University, 2006  
*Research America Eugene Garfield Prize for Medical and Health Research*, 2005  
*Elected Fellow*, Society of Labor Economists, 2004  
*Elected Member*, Conference on Research in Income and Wealth  
*Elected Founding Member*, National Academy of Social Insurance  
*William Ladany Research Scholar*, The University of Chicago, 1989-91  
*William Fishman Research Scholar*, The University of Chicago, 1986-87  
*Smith Richardson Dissertation Fellowship in Political Economy*, 1978-79  
*Foundation for Research in Economics and Education Fellowships*, 1975-79  
*Chancellor's Intern Fellow*, University of California, Los Angeles, 1975-79  
*University Fellow*, Northwestern University, 1975  
*General Electric Dissertation Fellowship*, 1978

## **TEACHING EXPERIENCE**

Graduate Economic Theory I, II, III  
Law, Economics and Business  
Competitive Strategy  
Advanced Topics in Labor Economics  
Advanced Topics in Microeconomics  
Managing the Workplace  
Industrial Organization/Antitrust  
Price Theory



## **OTHER PROFESSIONAL ACTIVITIES**

*Thompson Lecture* (Keynote Address), Midwest Economic Association, 2000  
*Nominating Committee*, American Economic Association, 1996, 1997  
*Program Committee*, American Economic Association, 2006-2007  
*Organizer*, Universities-NBER Research Conference: "Labor Markets in the 1990s," Cambridge, December 1989  
*Program Chair*, Labor Economics, Econometric Society Meetings, December 1989  
National Science Foundation Review Panel in Economics, 1998, 1999  
*Inaugural Keynote Lecture*, Missouri Economics Conference, University of Missouri, 2001  
*Pihl Lecturer*, Wayne State University, November, 2004  
*Keynote Address*, Federal Reserve Bank of Cleveland Conference on Education and Economic Development, November, 2004  
*Kirby Lecturer*, Texas A&M University, 2006  
*Huggins Lecturer*, Department of Surgery Huggins Conference, The University of Chicago, May, 2007  
*Keynote Address*, Conference Board of Canada Conference on Medical Research, Montreal, January 2009  
*Keynote Address*, Council on Competitiveness Conference on Energy Policy, Argonne National Laboratory, May 2009  
*Keynote Address*, The University of Chicago/RFF/University of Illinois Conference on *Energy Policy and the Economy*, Washington, D.C., January 2010  
*Keynote Address*, Humana Health Economics Forum, Santa Fe Institute, 2011  
*Keynote Address*, Toyota Sustainability Conference, La Jolla, 2011  
*Keynote Address*, Conference on Health Policy, Arizona State University, 2013

## **UNIVERSITY SERVICE**

Director, Undergraduate Program in Economics, 1980-83  
Chairman, Graduate School of Business Curriculum Review, 1990-91  
Committee on Graduate Education, 1992-94  
Committee on Undergraduate Education, 1993-94  
Council of the University Senate, 1992-94, 1995-97, 1999-2002, 2004-07, 2010-13  
Committee of the Council of the University Senate, 2000-02, 2006-07  
Chairman, Council of the University Senate Committee to Review and Interpret the University Statutes, 2012-13  
Graduate School of Business Policy Committee, 1995-97, 1999-2001  
Member, Presidential Search Committee, 1999-2000  
Board of Directors, The University of Chicago Laboratory Schools, 1986-92, 1998-2007  
Chairman, Director Search Committee, The University of Chicago Laboratory Schools, 2002-2003  
Area Coordinator, PhD Program in Economics, 2002-2008  
Director, George J. Stigler Center, 2007-2015  
Director, The University of Chicago Energy Initiative, 2008-2010  
Co-Director, Energy Policy Institute at Chicago, 2010-present

## **BIBLIOGRAPHY**

### ***Books:***

*The Welfare State in Transition*, with Richard Freeman and Birgitta Swedenborg. Chicago: The University of Chicago Press for NBER, 1997.

*Labor Market Data and Measurement*, with John Haltiwanger and Marilyn Manser. Chicago: The University of Chicago Press for NBER, 1998.

*Välfärdsstat i omvandling: Amerikanskt Perspektiv på den Svenska Modelten*, with Richard Freeman and Birgitta Swedenborg. Författarna och SNS Förlag, 1995.

*Measuring the Gains from Medical Research: An Economic Approach*, with Kevin M. Murphy. Chicago: The University of Chicago Press (2003).

*Reforming the Welfare State: Recovery and Beyond in Sweden*, with Richard Freeman and Birgitta Swedenborg, Chicago, The University of Chicago Press for NBER, 2009.

*Att Reformera Välfärdsstaten*, with Richard Freeman and Birgitta Swedenborg, SNS Förlag, Stockholm, 2006.

*Distributional Aspects of Energy and Climate Policy*, ed. with Mark Cohen and Don Fullerton, Special Issue of the BE Journal of Economic Analysis and Policy, Spring 2011. Also, Edward Elgar Publishing, Surrey, UK, 2013.

### ***Articles and Monographs:***

“Layoffs, Inventories, and the Demand for Labor,” Ph.D. Dissertation, University of California, Los Angeles, December 1980.

“Unemployment Insurance: Survey and Extensions” (with F. Welch), *Economica* **47** (August 1980): 351-79.

“Inventory Adjustments, Industry Behavior, and the Business Cycle” (with A. Stockman), presented at the NBER Conference on Inventories and Business Cycles, March 1980.

“Inventories, Layoffs, and the Short-Run Demand for Labor,” *American Economic Review* (September 1982): 769-87.

“Experience Rating of Unemployment Insurance and the Incidence of Unemployment,” *Journal of Law and Economics* (April 1984): 61-90.

“On Layoffs and Unemployment Insurance,” *American Economic Review* (September 1983): 541-59.

“Equilibrium Earnings, Turnover, and Unemployment: New Evidence,” *Journal of Labor Economics* (October 1984): 500-22.

“Local Labor Markets,” Presented at Hoover Institution Conference on Labor Markets, January 1983. *Journal of Political Economy* **94** (June 1986, part 2): 111-43.

“Estimation and Inference in ‘Two-Step’ Econometric Models” (with K. M. Murphy), *Journal of Business and Economic Statistics* **3** (October 1985): 370-80.

“Employment Risk, Sectoral Shifts, and Unemployment,” (with G. Neumann), in *Studies in Search*, ed. N. M. Kiefer and G. R. Neumann. Oxford: Oxford University Press, 1989.

“Unemployment and Unemployment Insurance,” *Research in Labor Economics* **7** (1985): 91-135.

“Efficient Labor Contracts with Employment Risk” (with F. Welch), *Rand Journal of Economics* **17** (Winter 1986): 490-507.

“Financing Unemployment Insurance: History, Incentives, and Reform,” in *Unemployment Insurance: The Second Half Century*, ed. W. Lee Hansen and J. Byers. University of Wisconsin Press, 1990.

“Sectoral Uncertainty and Unemployment” (with L. Weiss), UCLA Department of Economics Working Paper No. 384, September 1985, in *Employment, Unemployment, and Labor Utilization*, ed. R. A. Hart. Boston: Allen & Unwin, 1988.

“The Housing Market in the United States” (with S. Rosen), *Journal of Political Economy* (August 1988): 718-40.

“What They Say or What They Do? The Use of Survey Data in Predicting Behavior” (with K. M. Murphy), Graduate School of Business, The University of Chicago, March 1985.

“Unemployment, Risk and Earnings: Theory and Evidence from a Model of Equalizing Wage Differentials” (with K. M. Murphy), in *Unemployment and the Structure of Labor Markets*, ed. J. Leonard and K. Lang. London: Basil Blackwell, 1986, pp. 103-140.

“Job Mobility, Search, and Earnings Growth: A Reinterpretation of Human Capital Earnings Functions,” *Research in Labor Economics* **8** (1986): 199-233. Reprinted in *Research in Labor Economics 35<sup>th</sup> Anniversary Retrospective, 2012*, 401-435.

“The Evolution of Unemployment in the United States: 1968-1985” (with K. M. Murphy), *The NBER Macroeconomics Annual*, vol. 2, 1987, pp. 7-58.

“The Impact of Immigration on the Labor Market,” in *Immigration, Trade, and the Labor Market*, ed. R. Freeman. University of Chicago Press for NBER, 1988.

“Efficiency Wages Reconsidered: Theory and Evidence” (with K. M. Murphy), in *Advances in the Theory and Measurement of Unemployment*, pp. 204-40. Edited by Yoram Weiss and Gideon Fishelson. London: Macmillan, 1990.

“Labor Market Adjustments to Increased Immigration,” (with R. LaLonde), in *Immigration, Trade, and the Labor Market*, ed. R. Freeman. University of Chicago Press for NBER, 1989.

“Job Mobility and the Careers of Young Men” (with M. P. Ward), *Quarterly Journal of Economics* 107 (May 1992): 441-79.

“Employment Risk, Diversification, and Unemployment,” (with George Neumann) *Quarterly Journal of Economics* (November 1991): 1341-1365.

“Specific Capital, Mobility, and Wages: Wages Rise with Job Seniority,” *Journal of Political Economy* 99 (February 1991): 145-76. Reprinted in *Outstanding Contributions in Labor Economics*, ed. Orley Ashenfelter, Worth Publishers, 1999: 162-192.

“Specific Capital and Unemployment: Measuring the Costs and Consequences of Worker Displacement.” *Carnegie-Rochester Series on Public Policy* 33 (1990): 181-214.

“The Assimilation of Immigrants in the United States: Immigrant Quality and the Changing Price of Skills,” In *Immigration and the Work Force: Economic Consequences for the United States and Source Areas*, ed. G. Borjas and R. Freeman. Chicago: University of Chicago Press for NBER, 1992.

“Trends in the American Labor Market,” *GSB Chicago*, vol. 12, no. 2, Winter 1990, pp. 11-16.

“Why Has the Natural Rate of Unemployment Increased over Time?” (with K. Murphy and C. Juhn), *Brookings Papers on Economic Activity* 2 (1991), pp. 75-142.

“Immigrant Quality and Assimilation in the American Labor Market” (with R. LaLonde), *American Economic Review*, 81 (May 1991): 297-302.

“Unemployment and Insurance,” in *Proceedings of National Academy of Social Insurance*, 1992.

“Labor Markets and Economic Growth: Lessons from Korea’s Industrialization, 1970-1990” (with D. Kim), *Differences and Changes in Wage Structures*, ed. Richard Freeman and Larry Katz (Chicago: The University of Chicago Press for NBER, 1995).

“Wage Inequality and Regional Labor Market Performance in the United States,” *Labour Market and Economic Performance: Europe, Japan, and the USA*, ed. Toshiaki Tachibanaki (New York: St. Martin’s Press, 1994).

“Discretion and Bias in Performance Evaluation” (with C. Prendergast), *European Economic Review* 36 (June 1993): 355-65.

“What Have We Learned from Empirical Studies of Unemployment and Turnover?” *American Economic Review*, 83 (May 1993): 110-115.

“Regional Labor Markets and the Determinants of Wage Inequality,” *American Economic Review*, 84 (May 1994): 17-22.

“Ekonomiska problem i Sveriges välfärdsstat -- inledning, sammanfattning och slutsatser,” with Richard B. Freeman and Birgitta Swedenborg. In *Välfärdsstat i omvandling: Amerikanskt Perspektiv på den Svenska Modelten*, with Richard Freeman and Birgitta Swedenborg. Författarna och SNS Förlag, 1995.

“Lönepolitik och strukturomvandling,” with Per-Anders Edin. In *Välfärdsstat i omvandling: Amerikanskt Perspektiv på den Svenska Modelten*, with Richard Freeman and Birgitta Swedenborg. Författarna och SNS Förlag, 1995.

“Favoritism in Organizations” (with C. Prendergast), *Journal of Political Economy* **104** (October 1996): 958-78.

“In Celebration of Armen Alchian’s 80<sup>th</sup> Birthday: Living and Breathing Economics” (with Armen A. Alchian, James M. Buchanan, Harold Demsetz, Axel Leijonhufvud, John R. Lott, Jr., and William F. Sharpe), *Economic Inquiry*, Vol. XXXIV, July 1996, 412-426.

“Another Look at Look Labor Market Adjustments to Increased Immigration” (with J. Hojvat-Gallin and R. LaLonde), 1996.

“Economic Impact of International Migration and the Economic Performance of Migrants,” (with R. LaLonde), in *Handbook of Population and Family Economics*, ed. Mark R. Rosenzweig and Oded Stark (Amsterdam: North-Holland, 1997), pp. 799-850.

“Economic Troubles in Sweden's Welfare State,” in *The Welfare State in Transition*, ed. Richard Freeman, Robert Topel, and Birgitta Swedenborg. Chicago: The University of Chicago Press for NBER, 1997.

“Wage Policy and Restructuring: The Swedish Labor Market Since 1960” (with Per-Anders Edin), in *The Welfare State in Transition*, ed. Richard Freeman, Robert Topel, and Birgitta Swedenborg. Chicago: The University of Chicago Press for NBER, 1997.

“Unemployment and Nonemployment” (with Kevin M. Murphy), *American Economic Review* 87 (May 1997): 295-300.

“Factor Proportions and Relative Wages: The Supply Side Determinants of Wage Inequality,” *Journal of Economic Perspectives* 11 (Spring 1997): 55-74.

“Empirical Knowledge in Labor Economics,” in *Labor Market Data and Measurement*, ed. John Haltiwanger, Marilyn Manser, and Robert Topel. Chicago: The University of Chicago Press for NBER, 1998.

“Labor Markets and Economic Growth,” in *Handbook of Labor Economics*, ed. Orley Ashenfelter and David Card. Amsterdam: Elsevier Science B.V., 1999, pp. 2943-2984.

“Medical Research: What's It Worth?” (with K. M. Murphy), *Milken Institute Review: A Journal of Economic Policy* (First Quarter 2000): 23-30.

“Entry, Product Design, and Pricing in an Initially Monopolized Market” (with S. Davis and K. M. Murphy), The University of Chicago GSB, September 2001, revised January, 2003., *Journal of Political Economy*, vol. 112 no. 1, pt. 2, February, 2004, pp 188-225.

“Adverse Price Effects of Entry in Markets with Few Firms” (with Steven J. Davis and Kevin M. Murphy), Working Paper, The University of Chicago, April 2001.

“The Economic Value of Medical Research” (with Kevin M. Murphy), in *Measuring the Gains from Medical Research: An Economic Approach*, edited by Kevin M. Murphy and Robert H. Topel. Chicago: The University of Chicago Press, 2003, pp 41-73.

“Current Unemployment, Historically Contemplated” (with Kevin M. Murphy and Chinhui Juhn), *Brookings Papers on Economic Activity* 1. Washington, D.C.: The Brookings Institution, 2002.

“Estimation and Inference in Two-Step Econometric Models” (with K.M. Murphy), *Journal of Business and Economic Statistics*, 20, issue 1, 2002: 88-97 (reprint: 20<sup>th</sup> Anniversary issue of the most important contributions published in *JBES*).

“Labor Markets in the United States and Korea: Factor Proportions, Inequality, and Unemployment” in *Macroeconomic Implications of Post-Crisis Structural Change*, L.J. Cho, D. Cho and Y.H. Kim, KDI press, 2005, pp 131-60.

“Diminishing Returns? Evidence on the Costs and Benefits of Improving Health” (with K.M. Murphy), November 2002, *Perspectives in Biology and Medicine*, volume 46, no. 3, (Summer, 2003): pp108-128.

“War vs. Containment” (with S.J. Davis and K.M. Murphy), March 2003; presented at *NBER Conference on National Security Economics*, November 2003.

“Black-White Differences in the Economic Value of Improving Health” (with K. M. Murphy). Presented at the National Institutes of Health Conference on Racial Disparities in Health Outcomes, December 2001. *Perspectives in Biology and Medicine*, Summer, 2004.

“The Value of Health and Longevity” (with K.M. Murphy), Revised March, 2005, *NBER Working Paper #11405*, June 2005. *Journal of Political Economy*, October 2006, pp 871-904. Winner of the 2005 *Eugene Garfield Economic Impact of Medical Research Award*, given by Research America. Winner of the 2007 *Kenneth J. Arrow Award*, given by the International Health Economics Association for the best paper in health economics published in 2006.



“The Private and Social Benefits of Education” (with Fabian Lange), *Handbook of the Economics of Education*, North-Holland, 2006.

“The Social Value of Education”, *Keynote Address, Federal Reserve Bank of Cleveland Conference on Education and Economic Development, November 2004*, in *Education and Economic Development*, Federal Reserve Bank of Cleveland Economic Review, 2004, pp 47-58.

“On Human Capital and Economic Growth” (with Fabian Lange), Working Paper, The University of Chicago, September, 2005.

“Äterhämtning och terstaende problem I den svenska valfärdsstaten—inlending, sammanfattning och slutsatser” in *Att Reformera Valfärdsstaten*, with Richard Freeman and Birgitta Swedenborg, SNS Förlag, Stockholm, 2006, 9-34.

”Forandrade förutsättningar för svensk lonebildning” (with Peter Fredriksson), in *Att Reformera Valfärdsstaten*, with Richard Freeman and Birgitta Swedenborg, SNS Förlag, Stockholm, 2006, 65-82.

”War in Iraq versus Containment” (with Steven J. Davis and Kevin M. Murphy), for CESifo Conference “*Guns and Butter: The Economic Causes and Consequences of Conflict*”, Munich, December 2005, February, 2006.

“Social Value and the Speed of Innovation” (with Kevin M. Murphy), *American Economic Review*, May, 2007.

“Unemployment,”, *The New Palgrave of Economics*, 2008.

“Critical Loss Analysis in the Whole Foods Case”, *Global Competition Policy*, March, 2008, @ <http://www.globalcompetitionpolicy.org/index.php?&id=949&action=907>.

“Wage Determination and Employment in Sweden Since 1990” (with Peter Fredriksson), Working Paper, The University of Chicago and Uppsala University, August, 2006, revised December, 2008, in *Recovery and Beyond: Reforming the Welfare State in Sweden*, Richard Freeman, Birgitta Swedenborg and Robert Topel, eds., The University of Chicago Press for NBER, 2009.

“Reforming the Welfare State: Recovery and Beyond in Sweden” (with Richard Freeman and Birgitta Swedenborg), in *Recovery and Beyond: Reforming the Welfare State in Sweden*, Richard Freeman, Birgitta Swedenborg and Robert Topel, eds., The University of Chicago Press for NBER, 2009.

“On the Economics of Climate Policy” (with Gary S. Becker and Kevin M. Murphy), *BE Journal of Economic Analysis and Policy*, April 2011.

“Introduction to ‘Job Mobility Search and Earnings Growth, A Reinterpretation of Human Capital Earnings Functions”, *Research in Labor Economics 35<sup>th</sup> Anniversary Retrospective*, Emerald Group Publishing 2012, 397-400.

“Some Basic Economics of National Security” (with Kevin M. Murphy), *American Economic Review*, May 2013.

“Competitive Discounts and Antitrust Policy” (with Kevin. M. Murphy and Edward A. Snyder), *Oxford Handbook of Antitrust Economics*, 2015.

“Human Capital Investment, Inequality and Economic Growth” (with K. M. Murphy), *Journal of Labor Economics*, Volume 34, No. S2, Part 2, April 2016, 99-127

“Estimating the Social Value of a Prospective New Good: The Case of Hydrogen Fuel Cell Electric Vehicles”, *Proceedings of the Physics of Sustainable Energy IV (PSE-IV)*, Pushpalatha C. Bhat, George W. Crabtree & Robert H. Knapp Jr. (eds.), April 2017

### **Selected Congressional Testimony and Presentations:**

“Unemployment and Insurance,” Testimony before the U.S. Senate Committee on Finance, April 23, 1991.

“The Economic Value of Medical Research,” Testimony before the U.S. Senate Committee on Health, Education, Labor, and Pensions, May 10, 2001.

“The Value of Improvements in Health and Longevity,” Presentation for Congressional Staff and the American Cancer Society, Washington, July, 2005.

### **Selected Reports:**

“Unemployment Insurance Financing and Unemployment: Empirical Investigation of Adverse Incentives,” Final Report, U.S. Department of Labor Contract No. B9M22046, November 1982.

“Unemployment and Unemployment Insurance,” Final Report, U.S. Department of Labor, ETA, May 1984.

“Local Labor Markets,” Final Report, U.S. Department of Labor, Office of the Assistant Secretary for Policy, March 1984.

“The Use of Survey Data in Predicting Behavior: The Case of Enlistment Intentions,” Final Report, U.S. Department of Defense, May 1985.

“Equalizing Wage Differences,” Final Report, U.S. Department of Labor, Office of the Assistant Secretary for Policy, August 1985.

“Sectoral Change and Worker Displacement,” Final Report, U.S. Department of Labor, Office of the Assistant Secretary for Policy, March 1990.

### **Book Reviews:**

*Employment Hazards* by W. Kip Viscusi. In *Journal of Economic Literature*, March 1982.



*Handbook of Labor Economics*, ed. O. Ashenfelter and R. Layard. In *Journal of Economic Literature*, 1988.

**Selected Comments:**

“Comment on ‘Some Recent Developments in Labor Economics and Their Implications for Macroeconomics’,” *Journal of Money, Credit and Banking* **20** (August 1988, part 2).

“Comment on ‘Industry Rents: Evidence and Implications’,” (by Lawrence Summers and Lawrence Katz) *Brookings Papers on Economic Activity*, Brookings Institution, Washington, D.C., 1989.

“Comment on ‘Wage Dispersion between and within U.S. Manufacturing Plants’,” *Brookings Papers on Economic Activity*, 1991.

“Comment on ‘Why Is the U.S. Unemployment Rate So Much Lower?’” *NBER Macroeconomics Annual*, 1998, pp. 67-72.

“Comment on ‘Does Immigration Grease the Wheels of the Labor Market?’” by George J. Borjas. *Brookings Papers on Economic Activity*,, edited by William C. Brainard and George L. Perry. Washington, D.C. Brookings Institution, 2001.

“Comment on ‘Where did the Productivity Growth Go? Inflation Dynamics and the Distribution of Income’” by Ian Dew-Becker and Robert J. Gordon. *Brookings Papers on Economic Activity*. edited by William C. Brainard and George L. Perry. Washington, D.C. Brookings Institution, 2005, 135-44.

## **Recent Cases, Reports and Testimony**

**In Re Text Messaging Antitrust Litigation in the United States District Court for the Northern District of Illinois Eastern Division, No. 8 C 7082-MDL No. 1997.** Expert on behalf of AT&T, Sprint, T-Mobile, Verizon Wireless and CTIA. Expert Report, July 3, 2013. Supplemental Expert Report, July 15, 2013.

**The Apple iPod iTunes Antitrust Litigation in the United States District Court for the Northern District of California Oakland Division, No. C 05 00037 YRG, C 06 04457 YRG.** Expert on behalf of Apple in iPod antitrust class action. Expert Report, July 19, 2013.

**In Re Text Messaging Antitrust Litigation in the United States District Court for the Northern District of Illinois Eastern Division, No. 8 C 7082-MDL No. 1997.** Expert on behalf of AT&T, Sprint, T-Mobile, Verizon Wireless and CTIA. Deposition, September 16, 2013.

**The Education Management Corp. Shareholder Derivative Action in the Court of Common Pleas of Allegheny County, Pennsylvania, Civil Division, No. GD-12-008785.** Expert on behalf of Education Management Corp. in a Fraudulent Job Placement Claim and Incentive-Based Compensation Claim. Expert Report, October 14, 2013.

**The J.B. Hunt Transport, Inc. Wage and Hour Litigation in the United States District Court for the Central District of California Western Division, No. 2:07-cv-08336-MWF-FMOx.** Expert on behalf of J.B. Hunt Transport, Inc. in California Dedicated Contract Services and Intermodal Services drivers' class action. Declaration and Expert Report, October 17, 2013.

**The Apple iPod iTunes Antitrust Litigation in the United States District Court for the Northern District of California Oakland Division, No. C 05 00037 YRG, C 06 04457 YRG.** Expert on behalf of Apple in iPod antitrust class action. Deposition, November 8, 2013.

**The J.B. Hunt Transport, Inc. Wage and Hour Litigation in the United States District Court for the Central District of California Western Division, No. 2:07-cv-08336-MWF-FMOx.** Expert on behalf of J.B. Hunt Transport, Inc. in California Dedicated Contract Services and Intermodal Services drivers' class action. Deposition, December 10, 2013.

**The Apple iPod iTunes Antitrust Litigation in the United States District Court for the Northern District of California Oakland Division, No. C 05 00037 YRG, C 06 04457 YRG.** Expert on behalf of Apple in iPod antitrust class action. Supplemental Expert Report of Kevin M. Murphy and Robert H. Topel, December 20, 2013.

**The Education Management Corp. Shareholder Derivate Action in the Court of Common Pleas of Allegheny County, Pennsylvania, Civil Division, No. GD-12-008785.** Expert on behalf of Education Management Corp. in a Fraudulent Job Placement Claim and Incentive-Based Compensation Claim. Rebuttal Expert Report, January 8, 2014.

**The Apple iPod iTunes Antitrust Litigation in the Unites States District Court for the Northern District of California Oakland Division, No. C 05 00037 YRG, C 06 04457 YRG.** Expert on behalf of Apple in iPod antitrust class action. Deposition, January 8, 2014.

**Philip Petrone, et al v. Werner Enterprises, Inc. and Drivers Management, LLC, United States District Court, District of Nebraska, Case No: 8:12-cv-307.** Expert on behalf of Werner Enterprises in a class action wage and hour case. Expert Report, March 31, 2014.

**Pro-Sys Consultants LTD. and Neil Godfrey v. Microsoft Corporation and Microsoft Canada Co./Microsoft Canada CIE, In The Supreme Court of British Columbia Vancouver Registry, No. L043175.** Expert on behalf of Microsoft Corporation and Microsoft Canada Co./Microsoft Canada CIE in an antitrust class action case. Expert Report, April 9, 2014.

**Philip Petrone, et al v. Werner Enterprises, Inc. and Drivers Management, LLC, United States District Court, District of Nebraska, Case No: 8:12-cv-307.** Expert on behalf of Werner Enterprises in a class action wage and hour case. Expert Report, December 5, 2014.

**The Apple iPod iTunes Antitrust Litigation in the Unites States District Court for the Northern District of California Oakland Division, No. C 05 00037 YRG, C 06 04457 YRG.** Expert on behalf of Apple in iPod antitrust class action. Testimony, December 11, 2014.

**Philip Petrone, et al v. Werner Enterprises, Inc. and Drivers Management, LLC, United States District Court, District of Nebraska, Case No: 8:12-cv-307.** Expert on behalf of Werner Enterprises in a class action wage and hour case. Deposition, February 27, 2015.

**The Dow Chemical Company v. Industrial Polymers, Inc., Quabaug Corporation, and Seegott Holdings, Inc., et al., On Petition for Writ of Certiorari to the United States Court of Appeals for the Tenth Circuit, The Supreme Court of the United States. No. 14-1091.** Brief, April 9, 2015.

**Kleen Products LLC, et al. v. International Paper, et al., United States District Court for the Northern District of Illinois Eastern Division, Case No. 1:10-cv-05711.** Expert on behalf of Rock-Tenn CP, LLC in a containerboard antitrust class action case. Expert Report, June 8, 2015. Amended Expert Report, August 28, 2015. Deposition, October 1, 2015. Second Amended Expert Report, April 11, 2016.

**Yassine Baouch, et al v. Werner Enterprises, Inc. and Drivers Management, LLC, United States District Court, District of Nebraska, Civil Action No: 12-408.** Expert on behalf of Werner Enterprises in a class action wage and hour case. Expert Report, September 24, 2015.

**Kirk Wilkerson, et.al. v. Carolyn W. Colvin, Acting Commissioner, Social Security Administration, EEOC Case No. 531-2008-00034X.** Expert on behalf of the Social Security Administration in a class action discrimination case. Expert Report, September 25, 2015. Supplemental Expert Report, October 6, 2015.

**Dr. Miles Snowden v. UnitedHealth Group, Inc., Before the American Arbitration Association, AAA Case No. 01-15-0003-3853.** Expert on behalf of UnitedHealth Group, Inc. in an arbitration case. Rebuttal Expert Report, January 22, 2016.

**Stacy Lucas, Tarek Albaba, David Gamma, Sarah Fisher et al. v. Breg, Inc., Gary Losse, Mark Howard et al., United States District Court for the Southern District of California, Case No. 3:15-CV-02258,BAS-NLS.** Expert on behalf of Breg, Inc. in a false advertising case. Expert Report and Declaration, March 21, 2016.

**Wal-Mart Stores, Inc. Wage and Hour Litigations in the United States District Court for the Northern District of California, N. 3:08-cv-05221 SI.** Expert on behalf of Wal-Mart Stores, Inc in California truck driver class action. Expert Report, May 13, 2016. Deposition, June 29, 2016.

**Quinton Brown, et al. v. Nucor Corporation and Nucor Steel Berkeley in the United States District Court for the District of South Carolina, Charleston Division, No: 2:04-22055-CWH.** Expert Report, April 14, 2017.

**Nancy Lykkehoy v. General Mills, Inc., Before the American Arbitration Association, AAA Case No. 01-17-0001-8445.** Expert on behalf of General Mills, Inc. in an arbitration case. Expert Report, August 21, 2017.

## APPENDIX C: MATERIALS RELIED UPON

### Academic Articles

- Howard P. Marvel, “Exclusive Dealing,” *The Journal of Law and Economics*, vol. 25, (April 1982)
- Sherwin Rosen, “Distinguished Fellow: Mincering Labor Economics,” *The Journal of Economic Perspectives*, vol. 6, no. 2 (1992)

### Books

- ABA Section of Antitrust Law, *Proving Antitrust Damages* (2nd Edition, 2010)
- Andreu Mas-Collel, Michael D. Whinston, and Jerry R. Green, *Microeconomic Theory* (1995)
- Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization* (2005)
- George Borjas, *Labor Economics* (6th Edition, 2012)
- Greene, William H., *Econometric Analysis* (7th Edition, 2011)
- Hal R. Varian, *Microeconomics* (3rd Edition, 1992)
- Michael A. Hitt, R. Duane Ireland, Robert E. Hoskisson, *Strategic Management Cases: Competitiveness and Globalization* (10th Edition, 2013)
- Michael L. Katz and Harvey S. Rosen, *Microeconomics* (3rd Edition, 1998)
- Ronald Ehrenberg and Robert S. Smith, *Modern Labor Economics: Theory and Public Policy* (9th Edition, 2006)

### Depositions

- Deposition of Andrew Simon (July 19, 2017)
- Deposition of Brent Richard (July 20, 2017)
- Deposition of Carlos Silva (April 18, 2017)
- Deposition of Dana F. White (August 9, 2017)
- Deposition of Denitza Batchvarova (January 25, 2017)
- Deposition of Hal J. Singer, PhD. (September 27, 2017)
- Deposition of Jeffry Aronson (April 25, 2017)
- Deposition of Jeremy Lappen (February 28, 2017)
- Deposition of John Mulkey (April 19, 2017)
- Deposition of Joseph Silva (June 7, 2017)
- Deposition of Kirk Hendrick (November 29, 2016)
- Deposition of Kurt Otto (February 6, 2017)
- Deposition of Lorenzo J. Fertitta (March 23, 2017)
- Deposition of Marshall Zelaznik (February 8, 2017)
- Deposition of Michael P. Mersch (July 14, 2017)
- Deposition of Scott Coker (August 3, 2017)
- Deposition of Sean Shelby (April 12, 2017)
- Deposition of Shannon Knapp (April 11, 2017)

- Deposition of Thomas J. Atencio (February 9, 2017)
- Deposition of Tracy Long (January 26, 2017)
- Deposition of Zuffa, LLC by Ike Lawrence Epstein (August 15, 2017)
- Deposition of Zuffa, LLC by Ike Lawrence Epstein (December 2, 2016)
- Deposition of Zuffa, LLC by Ike Lawrence Epstein (July 21, 2017)
- Deposition of Zuffa, LLC by Kirk D. Hendrick (November 29-30, 2016)
- Deposition of Zuffa, LLC by Michael Mossholder (November 30, 2016)
- Deposition of Zuffa, LLC by Peter Dropick (December 1, 2016)

**Documents and Other Case Materials**

- Consolidated Amended Antitrust Class Action Complaint (*Cung Le, et al., v. Zuffa, LLC d/b/a Ultimate Fighting Championship and UFC*), Case No. 2:15-cv-01045-RFB-PAL (D.Nev.)
- Order re Motion to Quash, *Cung Le, et al., v. Zuffa, LLC d/b/a Ultimate Fighting Championship and UFC*, Case No. 2:15-cv-01045-RFB-PAL (D.Nev.) (June 13, 2017)
- Singer Backup
- Email exchange between Rami Genauer (FightMetric) and Augie Urschel (Economists Incorporated) (Nov. 19, 2016)
- LEPLAINTIFFS-0002247
- LEPLAINTIFFS-0042863
- ONECHAMPIONSHIP000006
- WME-ZUFFA-00001150
- WME-ZUFFA-00013978
- WSOF001632
- ZFL-0000064
- ZFL-0415638
- ZFL-0448811
- ZFL-0448819
- ZFL-0464891
- ZFL-0489704
- ZFL-0500960
- ZFL-0753136
- ZFL-0753823
- ZFL-0864885
- ZFL-0895315
- ZFL-0899290
- ZFL-1056348
- ZFL-1057314
- ZFL-1057413
- ZFL-1069504
- ZFL-1212232
- ZFL-1238033
- ZFL-1240584

- ZFL-1560180
- ZFL-1646497
- ZFL-2209239
- ZFL-2527749
- ZFL-2640748
- ZFL-2677499
- ZFL-2677898
- ZFL-2705160
- ZFL-2705173
- ZUF-00102396
- ZUF-00104944
- ZUF-00377712
- ZUF-00470398

### **Reports and Declarations**

- Expert Report of Hal J. Singer, Ph.D. (*Cung Le, et al., v. Zuffa, LLC d/b/a Ultimate Fighting Championship and UFC*) Case No. 2:15-cv-01045-RFB-PAL (D.Nev.) (August 31, 2017)
- Expert Report of Andrew Zimbalist (*Cung Le, et al., v. Zuffa, LLC d/b/a Ultimate Fighting Championship and UFC*) Case No. 2:15-cv-01045-RFB-PAL (D.Nev.) (August 30, 2017)
- Declaration of Matt Hume (May 4, 2017)
- Declaration of Rami Genauer (October 26, 2017)
- Declaration of Andrew R. Dick, Ph.D., Submitted to the Federal Trade Commission on Behalf of Zuffa, LLC (December 1, 2011)
- Declaration of Rodney D. Fort, Ph.D. Submitted to the Federal Trade Commission on Behalf of Zuffa, LLC (December 1, 2011)

### **Websites and News Articles**

- “About ONE” available at <https://onefc.com/about-one/>
- “Miller Lite Named the Official Title Sponsor for Bellator MMA,” Spike (Feb. 10, 2015), available at <http://www.spike.com/articles/6cyxhg/bellator-mma-miller-lite-named-the-official-title-sponsor-for-bellator-mma>.
- “Spike TV Continues UFC Counter Attack Tactics with ‘Unleashed: Diego Sanchez,” MMA Weekly (February 7, 2012) available at <http://www.mmaweekly.com/spike-tv-continues-ufc-counter-attack-tactics-with-unleashed-diego-sanchez>.
- Adam Hill, “A Timeline of UFC Rules: From No-Holds-Barred to Highly Regulated,” Bleacher Report (April 24, 2013) available at <http://bleacherreport.com/articles/1614213-a-timeline-of-ufc-rules-from-no-holds-barred-to-highly-regulated>
- Allan Snel “Export product: UFC dispatching fight shows to global venues,” Las Vegas Review Journal (January 12, 2104) available at <https://www.reviewjournal.com/business/export-product-ufc-dispatching-fight-shows-to-global-venues/>



- Andy Bull, “The Fight Game Reloaded: How MMA and UFC Conquered the World,” The Guardian (March 4, 2016) available at <https://www.theguardian.com/sport/2016/mar/04/the-fight-game-reloaded-how-mma-conquered-world-ufc>
- AXS TV Fights available at <http://www.axs.tv/programs/fights/>
- Bellator MMA, “About Us” available at <http://bellator.spike.com/about>
- Ben Fowlkes, “The Truth About Fighters and Sponsors,” (September 13, 2011), available at <https://www.mmafighting.com/2011/09/13/the-truth-about-fighters-and-sponsors>
- Brian Stelter, “As DVRs Shift TV Habits, Ratings Calculations Follow,” New York Times (Oct. 6, 2013), available at <http://www.nytimes.com/2013/10/07/business/media/dvrs-shift-tv-habits-and-ratings.html>
- Bryan Armen Graham, “New York ends ban and becomes 50th state to legalize mixed martial arts,” The Guardian (March 22, 2016) available at <https://www.theguardian.com/sport/2016/mar/22/new-york-legalizes-mma-ufc>
- Bureau of Labor Statistics CPI-U index (<https://www.bls.gov/news.release/cpi.toc.htm>)
- CPI Detailed Reports downloaded from <https://www.bls.gov/cpi/tables/detailed-reports/home.htm>
- Dave Meltzer, “Bellator tops UFC in weekend ratings by 96,000 viewers,” MMAFighting (September 26, 2017) available at <https://www.mmafighting.com/2017/9/26/16371222/bellator-tops-ufc-in-weekend-ratings-by-96000-viewers>
- Dave Meltzer, “The pitfalls that faced UFC before its television success,” MMAFighting (November 16, 2013) available at <https://www.mmafighting.com/2013/11/16/5105738/the-pitfalls-that-faced-ufc-before-its-television-success>
- David Plotz, “Fight Clubbed,” Slate (November 17, 1999) available at [http://www.slate.com/articles/briefing/articles/1999/11/fight\\_clubbed.html](http://www.slate.com/articles/briefing/articles/1999/11/fight_clubbed.html)
- Federal Trade Commission, “Market Division or Customer Allocation”, <https://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws/dealings-competitors/market-division-or>
- Fernando Quiles Jr., “Gilbert Melendez Explains How Free Agency Improved His UFC Contract,” MMA News (August 20, 2017) available at <http://www.mmanews.com/gilbert-melendez-explains-how-free-agency-improved-his-ufc-contract>
- FightMatrix, “FAQ,” available at <http://www.fightmatrix.com/faq/>
- Greg Fernstein, “How Dana White Built a UFC Empire With Social Media,” Mashable (June 8, 2010) available at [http://mashable.com/2010/06/08/dana-white-ufc-social-media/#C\\_hk4zdPEgqH](http://mashable.com/2010/06/08/dana-white-ufc-social-media/#C_hk4zdPEgqH)
- Gregory Fernstein, “UFC and Its Gang of 4.6 Million Facebook Friends Body Slam Sports Broadcasting,” Fast Company (February 4, 2011) available at <https://www.fastcompany.com/1723897/ufc-and-its-gang-46-million-facebook-friends-body-slam-sports-broadcasting>



- <http://www.espn.com/espnw/sports/article/19345095/ufc-confirms-addition-women-flyweight-division>
- [http://www.ufc.com/fighter/Weight\\_Class](http://www.ufc.com/fighter/Weight_Class)
- <http://www.ufc.com/news/UFC-208-introduces-women-featherweight-division-holm-derandamie-brooklyn>
- <https://twitter.com/danawhite>
- [https://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/1991/press.html](https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1991/press.html)
- [https://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/1993/press.html](https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1993/press.html)
- [https://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/2009/advanced-economicsciences2009.pdf](https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2009/advanced-economicsciences2009.pdf)
- [https://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/2016/advanced-economicsciences2016.pdf](https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2016/advanced-economicsciences2016.pdf)
- [https://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/2016/holmstrom-facts.html](https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2016/holmstrom-facts.html)
- Invicta Fighting Championship, “About,” available at <http://www.invictafc.com/about-us/>
- James Iannotti, “HDNet reaches television agreements with DREAM and K-1,” SBNation (November 4, 2008) available at <https://www.mmamania.com/2008/11/24/hdnet-reaches-television-agreements-with-dream-and-k-1>
- Jason Cruz, “Updated: WSOF 34 draws 951,000 viewers, prelims draw 71,000 on NBCSN,” Payout (January 4, 2017) available at <http://mmapayout.com/2017/01/wsof-34-draws-941000-viewers-prelims-draw-71000-on-nbcsn/>
- Jeff Beer, “How UFC is Taking the World’s Oldest Sport Into the Future of Media,” Fast Company (July 7, 2016) available at <https://www.fastcompany.com/3061603/how-ufc-is-taking-the-worlds-oldest-sport-into-the-future-of-media>
- Jerry Bonkowski, “NBCSN to televise new MMA league bout after Daytona Xfinity race,” NBCSports (Jun. 1, 2017), available at <http://nascar.nbcsports.com/2017/06/01/nbcsn-to-televise-new-mma-league-exhibition-bout-after-daytona-xfinity-race/>
- Jesse Holland, “UFC International expansion plans include Macau in 2012, Singapore in 2013,” Bloody Elbow (November 4, 2011) available at <https://www.bloodyelbow.com/2013/10/31/5051454/ufc-brazilian-tv-deals-booming-business-millions-mma-news>
- John Eligon, “A Boxing Regulator Changes Corners,” New York Times (November 24, 2006) available at <http://www.nytimes.com/2006/11/24/sports/othersports/24fight.html>
- Kristi Dosh, “The Evolution of UFC Event Marketing: From the Beginning to UFC 200,” Forbes (July 9, 2016), available at <https://www.forbes.com/sites/kristidosh/2016/07/09/the-evolution-of-ufc-event-marketing-from-the-beginning-to-ufc-200/>
- Levi Nile, “UFC and Their Plans for Global Expansion,” Bleacher Report (January 16, 2014) available at <http://bleacherreport.com/articles/1926281-ufc-and-their-plans-for-global-expansion>

- Luke Thomas, “Bellator MMA programming to continue in new Spike re-branded Paramount Network,” MMAFighting (Feb. 9, 2017), available at <https://www.mmafighting.com/2017/2/9/14560444/bellator-mma-programming-spike-re-branded-paramount-network-mma-news>
- Marc Raimondi, “How will the UFC's Reebok deal change the landscape? Managers weigh in,” (December 9, 2014), available at <https://www.mmafighting.com/2014/12/9/7343449/how-will-the-ufcs-reebok-deal-change-the-landscape-managers-weigh-in>
- Marc Raimondi, “Spike TV president: Bellator MMA 'on an even footing' with the UFC,” MMA Fighting (February 8, 2015), available at <https://www.mmafighting.com/2015/2/8/7926603/spike-tv-president-bellator-mma-on-an-even-footing-with-the-ufc>
- Mark Bergmann, “Former PRIDE CEO Sakakibara plans to return to US market with new RIZIN promotion,” Bloody Elbow (May 25, 2016) available at <https://www.bloodyelbow.com/2016/5/25/11766304/former-pride-ceo-sakakibara-plans-return-to-us-market-with-new-rizin>
- Mike Bohn, “UFC champ Ronda Rousey: I don’t want people to know how much money I make,” MMAJunkie (Oct. 13, 2014), available at <http://mmajunkie.com/2014/10/ufc-champ-ronda-rousey-i-dont-want-people-to-know-how-much-money-i-make>
- Mike Chiappetta, “‘The Grass Is Greener’: UFC-to-Bellator Signees Speak Out,” Bleacher Report (April 5, 2016), available at <http://bleacherreport.com/articles/2630256-the-grass-is-greener-ufc-to-bellator-signees-speak-out>
- Mookie Alexander, “Ratings: Bellator 149 peaked at 2.7 million viewers, UFC fails to average 1 million,” Bloody Elbow (February 23, 2016) available at <https://www.bloodyelbow.com/2016/2/23/11099616/ratings-bellator-149-peaked-at-2-7-million-viewers-ufc-fails-to-average-1-million-mma-news>
- NBA Collective Bargaining Agreement at Exhibit A, A-15-16, available at <http://nbpa.com/wp-content/uploads/2016/02/2017-NBA-NBPA-Collective-Bargaining-Agreement.pdf>
- One Championship, “ONE Championship Television Ratings Show Incredible Growth in Last Three Years” (April 26, 2017) available at <https://onefc.com/articles/one-championship-television-ratings-show-incredible-growth-in-last-three-years/>
- Patrick Wyman, The Top 25 MMA Prospects for 2017, Part 2, Bleacher Report (January 30, 2017) available at <http://bleacherreport.com/articles/2687394-the-top-25-mma-prospects-for-2017-part-2>
- PFL: Daytona Highlights: Jon Fitch gets first finish in more than 10 years, MMA Junkie (July 1, 2017) available at <http://mmajunkie.com/2017/07/pfl-daytona-highlights-video-jon-fitch-submission-brian-foster>
- Professional Fighters League available at <http://www.professionalfightersleague.com/>
- Prospective NBA License Application, online at [http://www.nba.com/media/NBAP\\_Licensee\\_Application.pdf](http://www.nba.com/media/NBAP_Licensee_Application.pdf).
- Reference Manual on Scientific Evidence, Third Edition (2011) at p. 251, available at <https://www.fjc.gov/sites/default/files/2015/SciMan3D01.pdf>

- Ron Borges, “It was the Ultimate save; Business plan by Fertittas and White took UFC from the brink to the heights” Boston Herald (August 26, 2010) available at [http://www.bostonherald.com/sports/other/ultimate\\_fighting/2010/08/business\\_plan\\_fertittas\\_and\\_white\\_took\\_ufc\\_brink\\_heights](http://www.bostonherald.com/sports/other/ultimate_fighting/2010/08/business_plan_fertittas_and_white_took_ufc_brink_heights)
- Sean Hyson, “Dana White, the man, the sport, and the money,” Men’s Fitness available at <http://www.mensfitness.com/sports/mma/dana-white>
- Shaun Al-Shatti, “Bellator CEO Bjorn Rebney Responds to Criticism from Dana White: ‘It’s Very, Very Hypocritical’”, [www.mmafighting.com](http://www.mmafighting.com), September 24, 2012 (<https://www.mmafighting.com/2012/9/24/3384434/bellator-bjorn-rebney-respond-dana-white-criticism-matching-rights-ufc-hollett-nam>)
- Sherdog.com, “Michael Chandler” available at <http://www.sherdog.com/fighter/Michael-Chandler-50829>
- Sherdog.com, “Michael Page” available at <http://www.sherdog.com/fighter/Michael-Page-91937>
- Sherdog.com, “Muhammed-Lawal” available at <http://www.sherdog.com/fighter/Muhammed-Lawal-29858>
- Sherdog.com, “Recent Events, Absolute Championship Berkut” available at <http://www.sherdog.com/organizations/Absolute-Championship-Berkut-8185>
- Steve Barry, “Bellator Fighting Championships Announce Agreement with ESPN Deportes,” MMA Convert, (November 19, 2008) available at <http://www.mmaconvert.com/2008111119/bellator-fighting-championships-announces-agreement-with-espn-deportes/>
- Steve Feiner, “ONE Championship attracts massive TV ratings with recent blockbuster events,” Huffington Post (May 11, 2017) available at [https://www.huffingtonpost.com/entry/one-championship-attracts-massive-tv-ratings-with-recent\\_us\\_5914fb56e4b02d6199b2edd8](https://www.huffingtonpost.com/entry/one-championship-attracts-massive-tv-ratings-with-recent_us_5914fb56e4b02d6199b2edd8)
- Steven Marrocco, “Bellator 180 pay-per-view price set at \$49.95 for high-definition,” MMA Junkie (Mar. 27, 2017), available at <http://mmajunkie.com/2017/03/bellator-180-pay-per-view-price-set-at-49-95-for-high-definition> (discussing PPV pricing for Bellator 180 and Bellator 120)
- Stuart Miller, “Defending the Belt; UFC hits 100 and Keeps Swinging,” Multichannel News (July 6, 2009) available at <http://www.multichannel.com/news/cable-operators/defending-belt/329689>
- Stuart Miller, “Defending the Belt; UFC hits 100 and Keeps Swinging,” Multichannel News (July 6, 2009), available at <http://www.multichannel.com/news/cable-operators/defending-belt/32968>
- Teddy Montemayor and John Bieschke, “How the UFC and Reebok Changed the Sponsorship Landscape in MMA,” MMA Newslines (January 9, 2017), available at <http://www.mmanewslines.com/how-ufc-and-reebok-changed-sponsorship-landscape-in-mma/>
- TiVo, History (accessed Oct. 24, 2017), <https://www.tivo.com/history> (the first DVR to ever exist, TiVo, shipped by March 31, 1999)

- USADA, “About USADA’s Role in the UFC Anti-Doping Program,” available at <https://ufc.usada.org/>
- Viacom, “Spike,” available at <http://www.viacom.com/brands/pages/spike.aspx>
- Zane Simon, “UFC’s Brazilian TV deals are a booming business,” Bloody Elbow (October 31, 2013) available at <https://www.bloodyelbow.com/2013/10/31/5051454/ufc-brazilian-tv-deals-booming-business-millions-mma-news>

**Exhibit 1 - Venues in North America Used by Zuffa in 2016**

Venue	Location	Event	Date	Venue Used by Zuffa in 2005-2015
Air Canada Centre	Toronto, Ontario, Canada	UFC 206 - Holloway vs. Pettis	12/10/2016	Yes
Amalie Arena	Tampa, Florida, United States	UFC on Fox 19 - Teixeira vs. Evans	4/16/2016	No
Consol Energy Center	Pittsburgh, Pennsylvania, United States	UFC Fight Night 83 - Cerrone vs. Oliveira	2/21/2016	Yes
Denny Sanford Premier Center	Sioux Falls, South Dakota, United States	UFC Fight Night 91 - McDonald vs. Lineker	7/13/2016	No
Golden 1 Center	Sacramento, California, United States	UFC on Fox 22 - VanZant vs. Waterson	12/17/2016	No
MGM Grand Garden Arena	Las Vegas, Nevada, United States	UFC 195 - Lawler vs. Condit	1/02/2016	Yes
		UFC Fight Night 82 - Hendricks vs. Thompson	2/06/2016	Yes
		UFC 196 - McGregor vs. Diaz	3/05/2016	Yes
		UFC 197 - Jones vs. St. Preux	4/23/2016	Yes
		UFC Fight Night 90 - Dos Anjos vs. Alvarez	7/07/2016	Yes
		UFC - The Ultimate Fighter 23 Finale	7/08/2016	Yes
Madison Square Garden	New York, New York, United States	UFC 205 - Alvarez vs. McGregor	11/12/2016	No
Mandalay Bay Events Center	Las Vegas, Nevada, United States	UFC Fight Night 88 - Almeida vs. Garbrandt	5/29/2016	Yes
Mexico City Arena	Mexico City, Federal District, Mexico	UFC Fight Night 98 - Dos Anjos vs. Ferguson	11/05/2016	Yes
Moda Center	Portland, Oregon, United States	UFC Fight Night 96 - Lineker vs. Dodson	10/01/2016	Yes
Palms Casino Resort	Las Vegas, Nevada, United States	UFC - The Ultimate Fighter 24 Finale	12/03/2016	Yes
Philips Arena	Atlanta, Georgia, United States	UFC 201 - Lawler vs. Woodley	7/30/2016	Yes
Prudential Center	Newark, New Jersey, United States	UFC on Fox 18 - Johnson vs. Bader	1/30/2016	Yes
Quicken Loans Arena	Cleveland, Ohio, United States	UFC 203 - Miocic vs. Overeem	9/10/2016	No
Rogers Arena	Vancouver, British Columbia, Canada	UFC on Fox 21 - Maia vs. Condit	8/27/2016	Yes
State Farm Arena	Hidalgo, Texas, United States	UFC Fight Night 94 - Poirier vs. Johnson	9/17/2016	No
T-Mobile Arena	Las Vegas, Nevada, United States	UFC 200 - Tate vs. Nunes	7/09/2016	No
		UFC 202 - Diaz vs. McGregor 2	8/20/2016	No
		UFC 207 - Nunes vs. Rousey	12/30/2016	No
TD Garden	Boston, Massachusetts, United States	UFC Fight Night 81 - Dillashaw vs. Cruz	1/17/2016	Yes
TD Place Arena	Ottawa, Ontario, Canada	UFC Fight Night 89 - MacDonald vs. Thompson	6/18/2016	No
The Forum	Inglewood, California, United States	UFC 199 - Rockhold vs. Bisping 2	6/04/2016	No
Times Union Center	Albany, New York, United States	UFC Fight Night 102 - Lewis vs. Abdurakhimov	12/09/2016	No
United Center	Chicago, Illinois, United States	UFC on Fox 20 - Holm vs. Shevchenko	7/23/2016	Yes
Vivint Smart Home Arena	Salt Lake City, Utah, United States	UFC Fight Night 92 - Rodriguez vs. Caceres	8/06/2016	No

**Source:**

Singer Backup ("Sherdog Denom for Market Shares.dta")

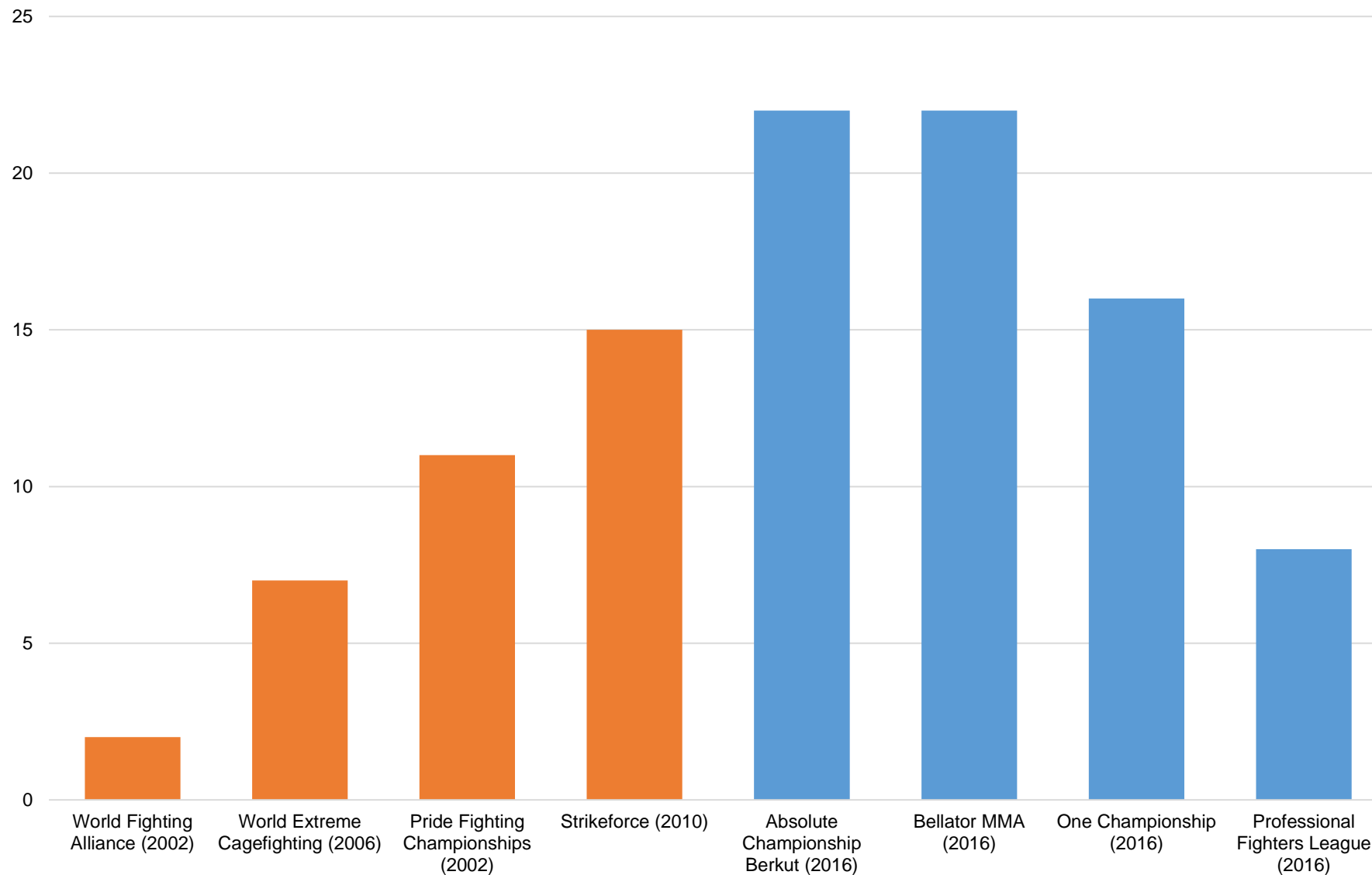
**Exhibit 2 - Examples of MMA Promoters That Have Used Venues in North America Booked by Zuffa in 2005-2016**

<b>Promoter</b>	<b>Description</b>	<b>Link to Sherdog.com Organization Page</b>	<b>Count of North American Events (2005-2016)</b>
King of the Cage	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/King-of-the-Cage-1">http://www.sherdog.com/organizations/King-of-the-Cage-1</a>	398
Bellator MMA	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/Bellator-MMA-1960">http://www.sherdog.com/organizations/Bellator-MMA-1960</a>	163
Rage in the Cage	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/Rage-in-the-Cage-18">http://www.sherdog.com/organizations/Rage-in-the-Cage-18</a>	111
Extreme Challenge	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/Extreme-Challenge-17">http://www.sherdog.com/organizations/Extreme-Challenge-17</a>	97
Tuff-N-Uff	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/TuffNUff-972">http://www.sherdog.com/organizations/TuffNUff-972</a>	75
King of the Cage Canada	Canada-based MMA Promotion	<a href="http://www.sherdog.com/organizations/King-of-the-Cage-Canada-1414">http://www.sherdog.com/organizations/King-of-the-Cage-Canada-1414</a>	69
Xtreme Fighting Organization	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/Xtreme-Fighting-Organization-421">http://www.sherdog.com/organizations/Xtreme-Fighting-Organization-421</a>	59
Cage Fury Fighting Championships	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/Cage-Fury-Fighting-Championships-813">http://www.sherdog.com/organizations/Cage-Fury-Fighting-Championships-813</a>	58
Reality Fighting	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/Reality-Fighting-611">http://www.sherdog.com/organizations/Reality-Fighting-611</a>	48
Resurrection Fighting Alliance	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/Resurrection-Fighting-Alliance-4265">http://www.sherdog.com/organizations/Resurrection-Fighting-Alliance-4265</a>	46
Titan Fighting Championship	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/Titan-Fighting-Championship-740">http://www.sherdog.com/organizations/Titan-Fighting-Championship-740</a>	41
Cage Fighting Xtreme	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/Cage-Fighting-Xtreme-569">http://www.sherdog.com/organizations/Cage-Fighting-Xtreme-569</a>	41
International Fighting Championship	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/International-Fighting-Championship-15">http://www.sherdog.com/organizations/International-Fighting-Championship-15</a>	41
Real Fighting Championships	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/Real-Fighting-Championships-671">http://www.sherdog.com/organizations/Real-Fighting-Championships-671</a>	38
World Series of Fighting	U.S.-based MMA Promotion	<a href="http://www.sherdog.com/organizations/World-Series-of-Fighting-5449">http://www.sherdog.com/organizations/World-Series-of-Fighting-5449</a>	36

**Source:**

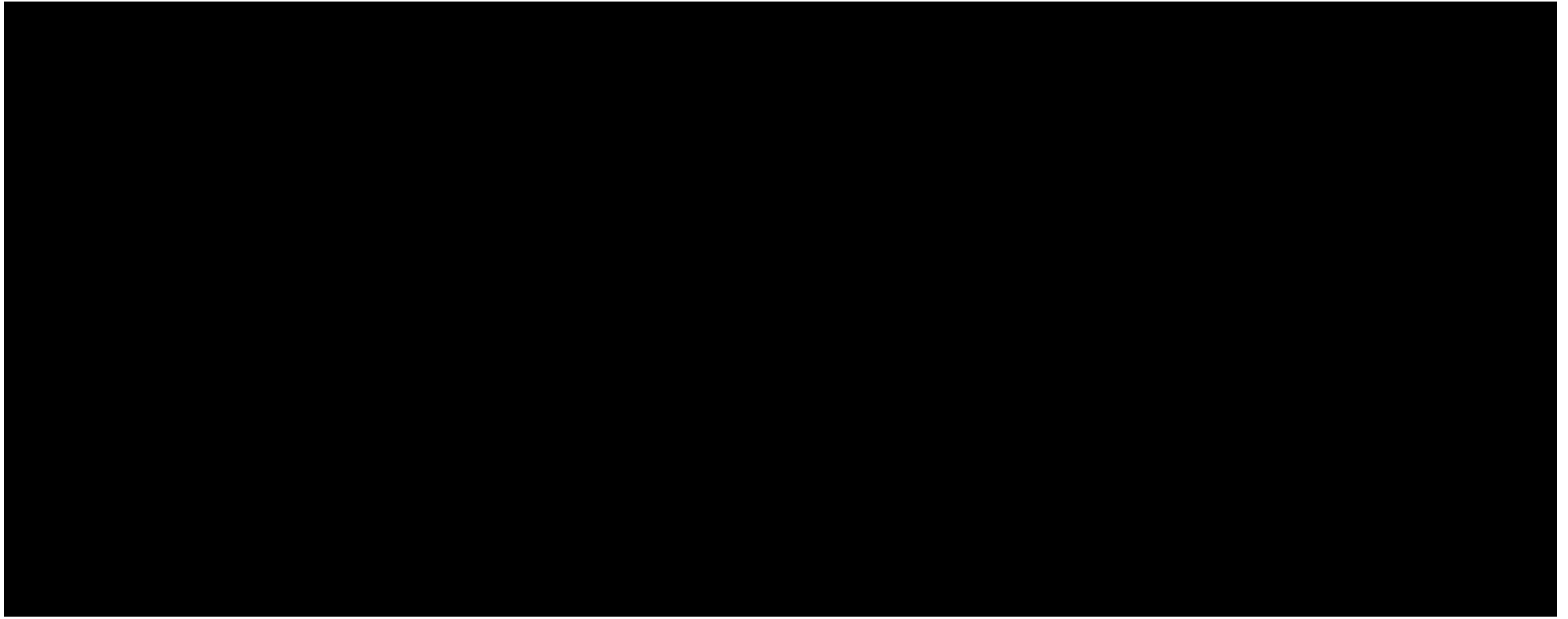
Singer Backup ("Sherdog Denom for Market Shares.dta")

### Exhibit 3 - Annual Event Count for Zuffa Acquired Promoters and Selected Rival Promoters

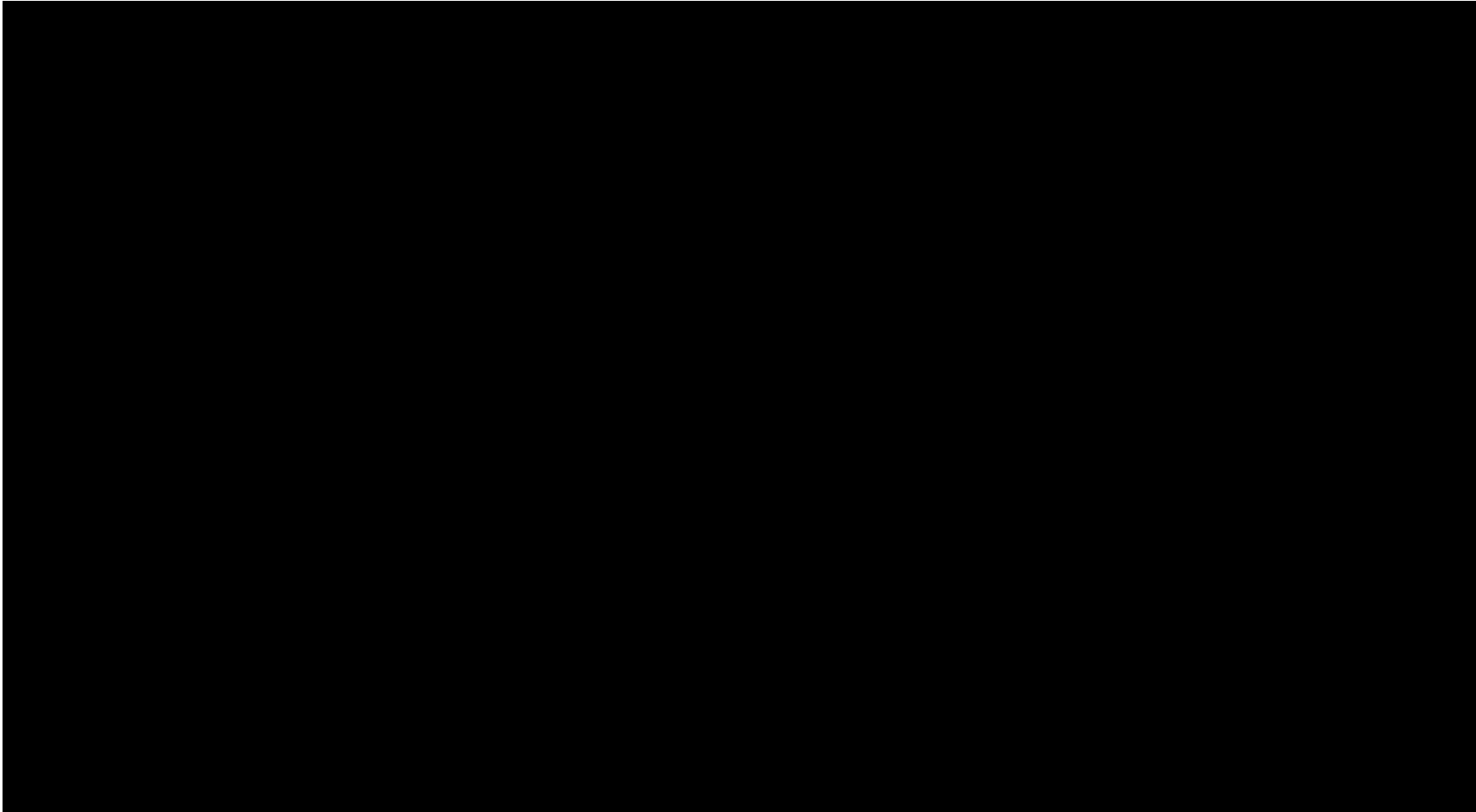


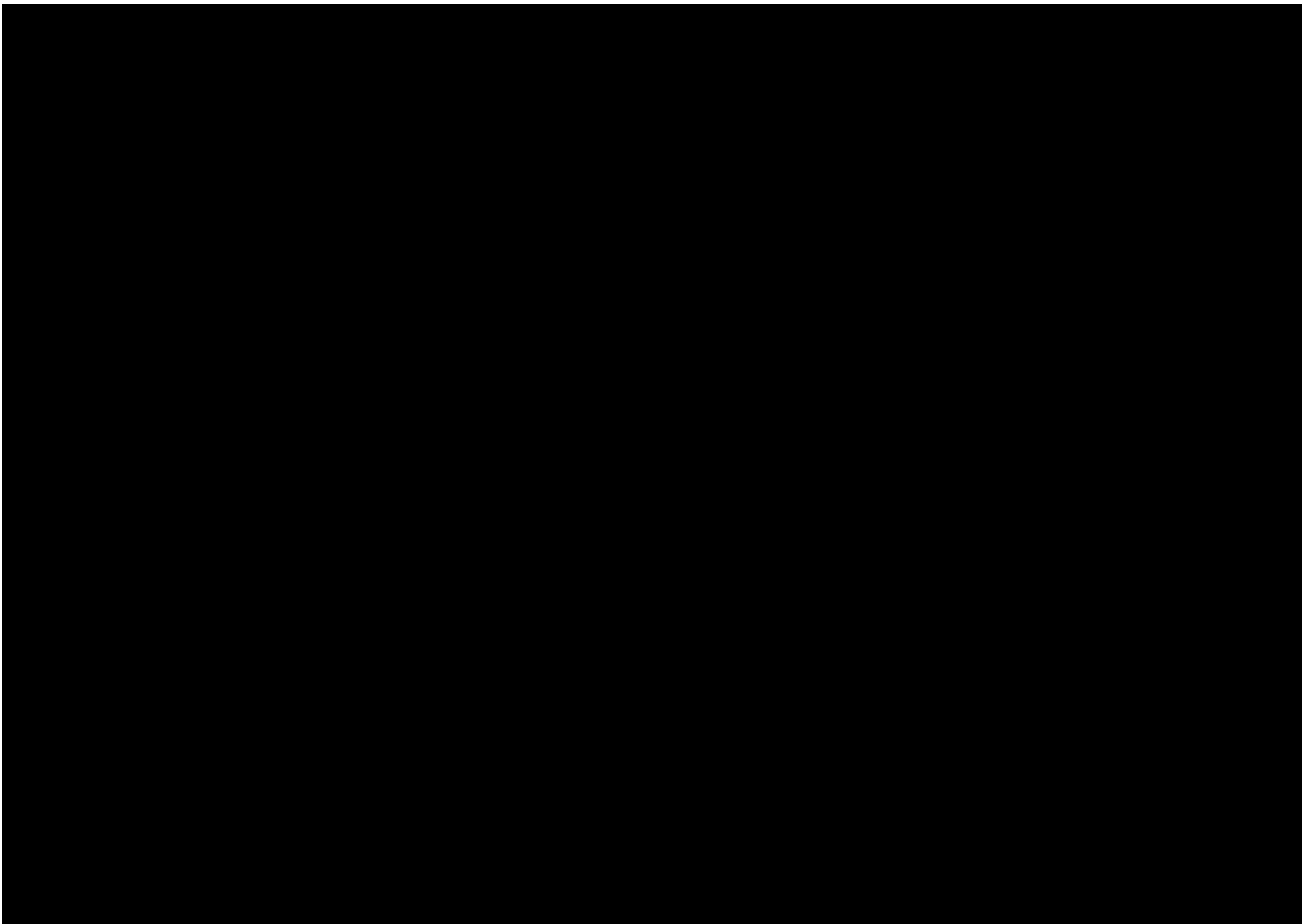
**Note:** Includes total event count for 2016 for selected rival promoters, and total event count for the peak pre-acquisition year for Zuffa acquired promoters.

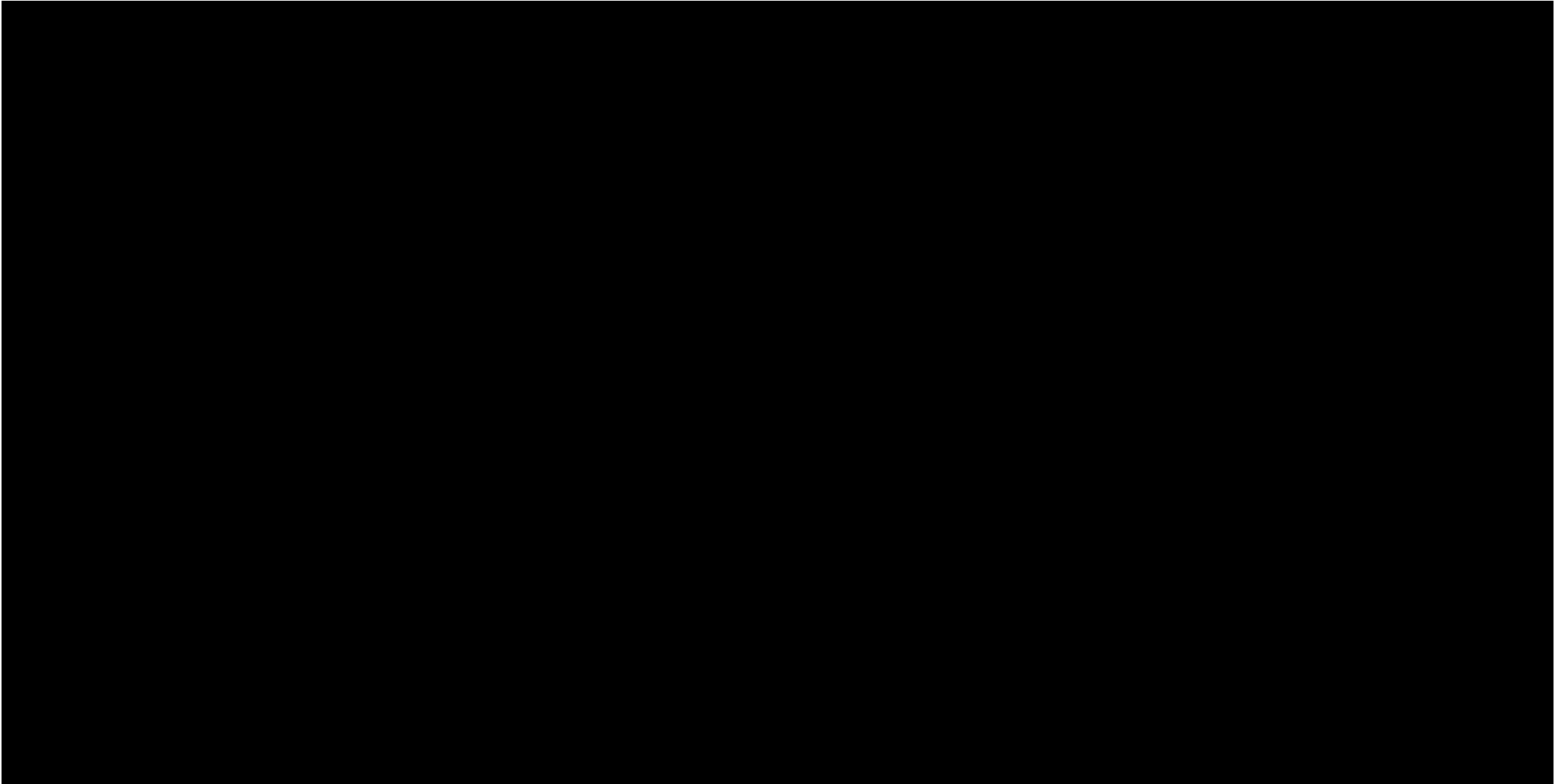
**Source:** Singer Backup ("All Sherdog Scrape.dta")

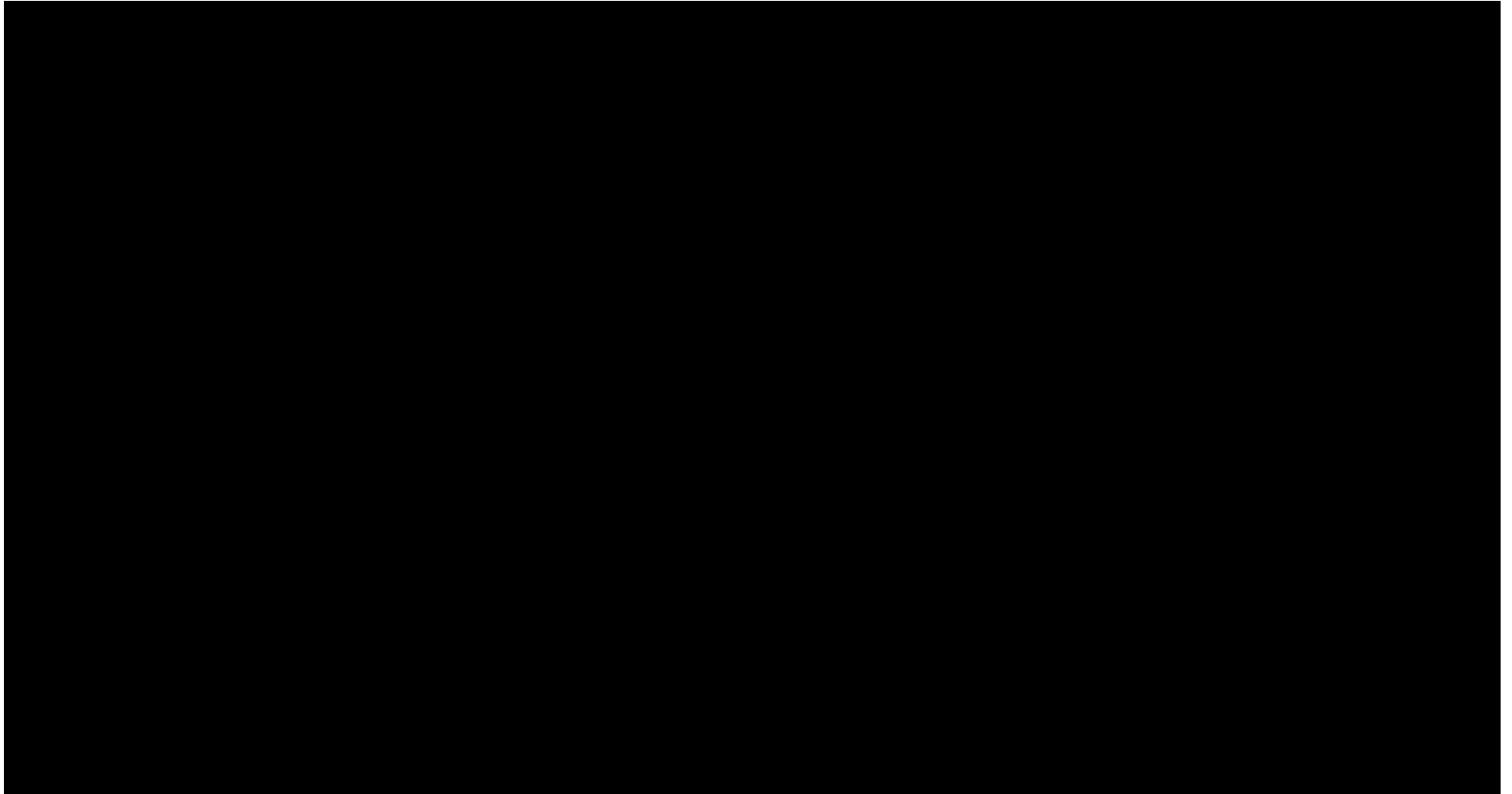


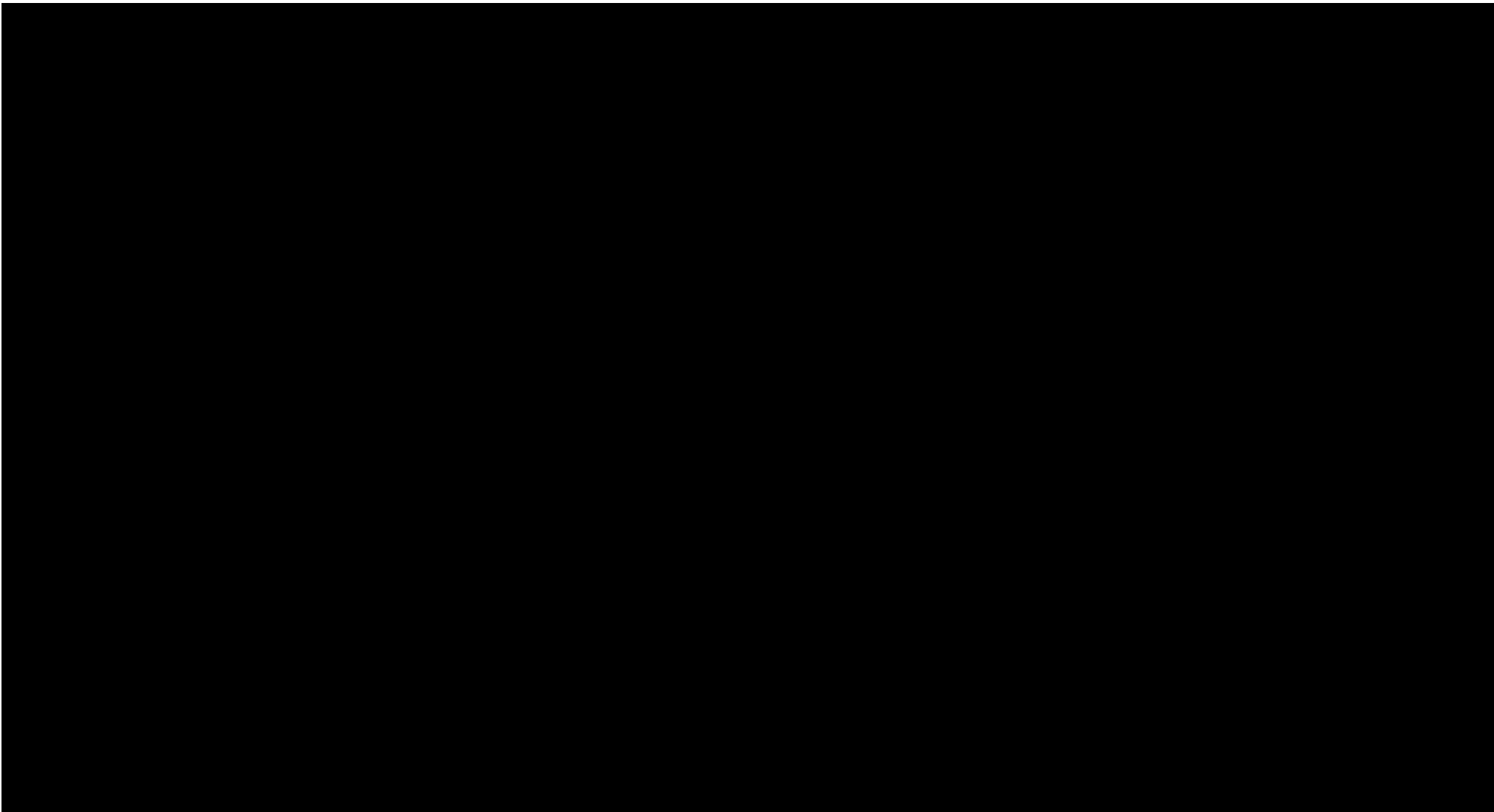


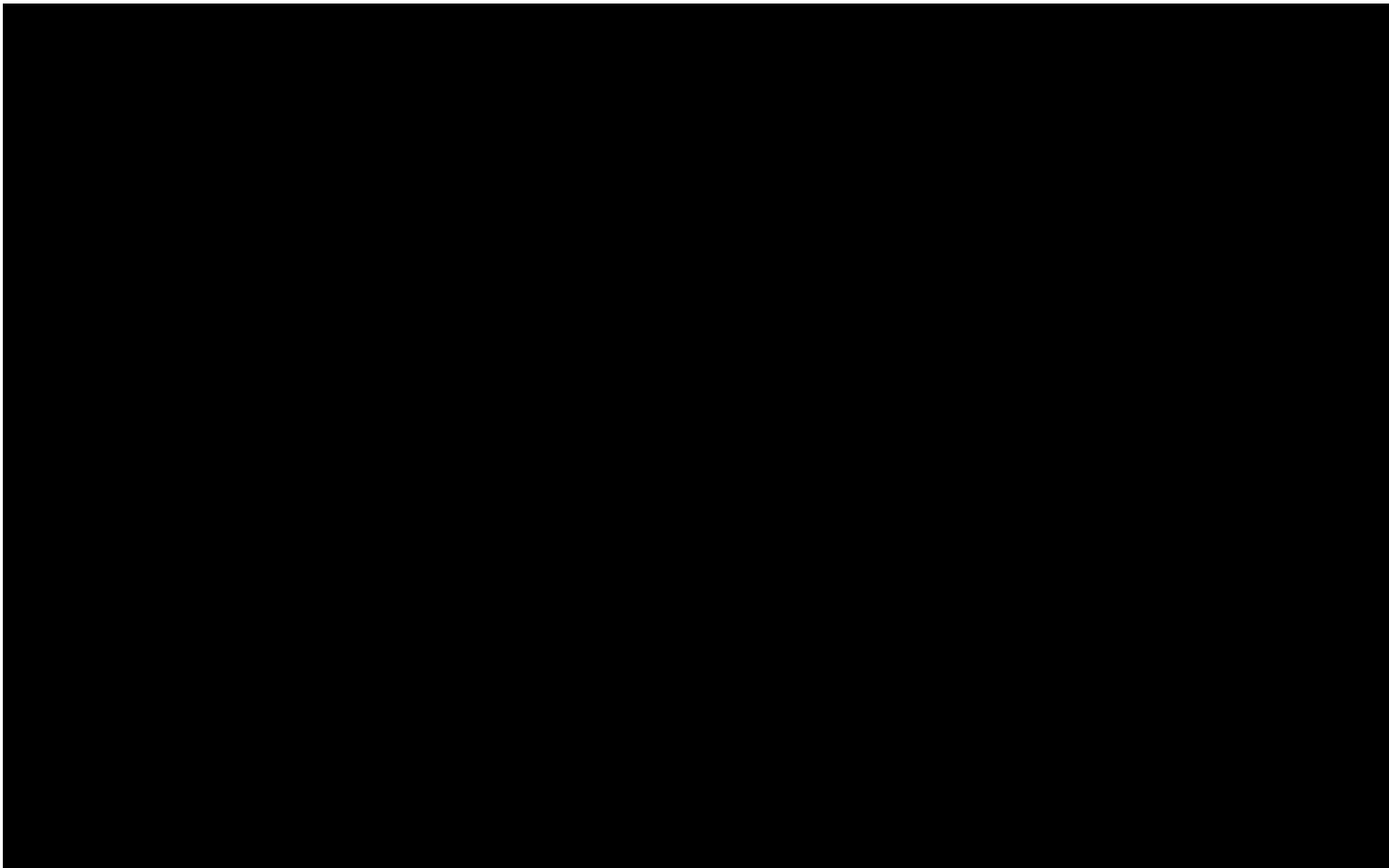


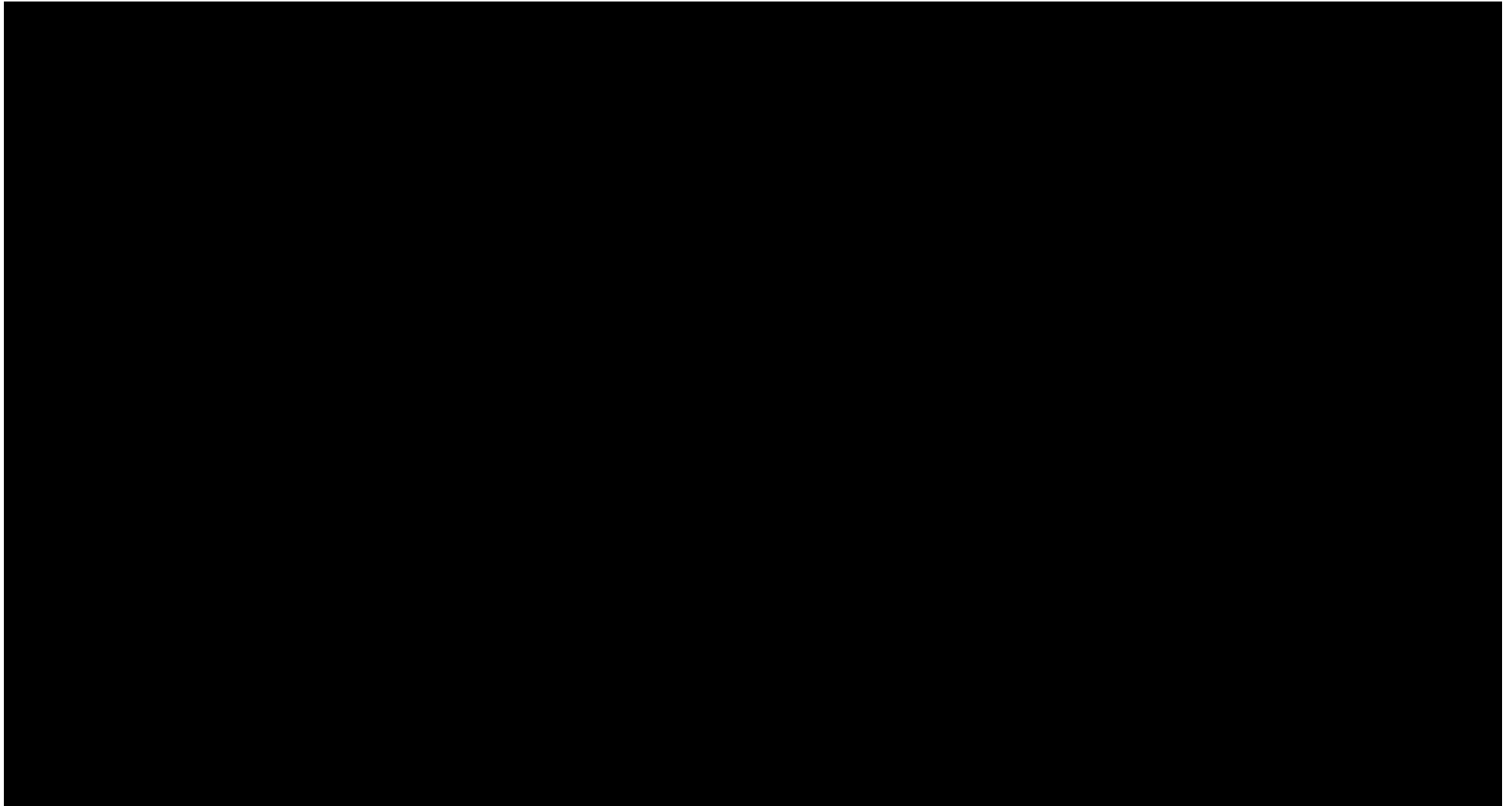


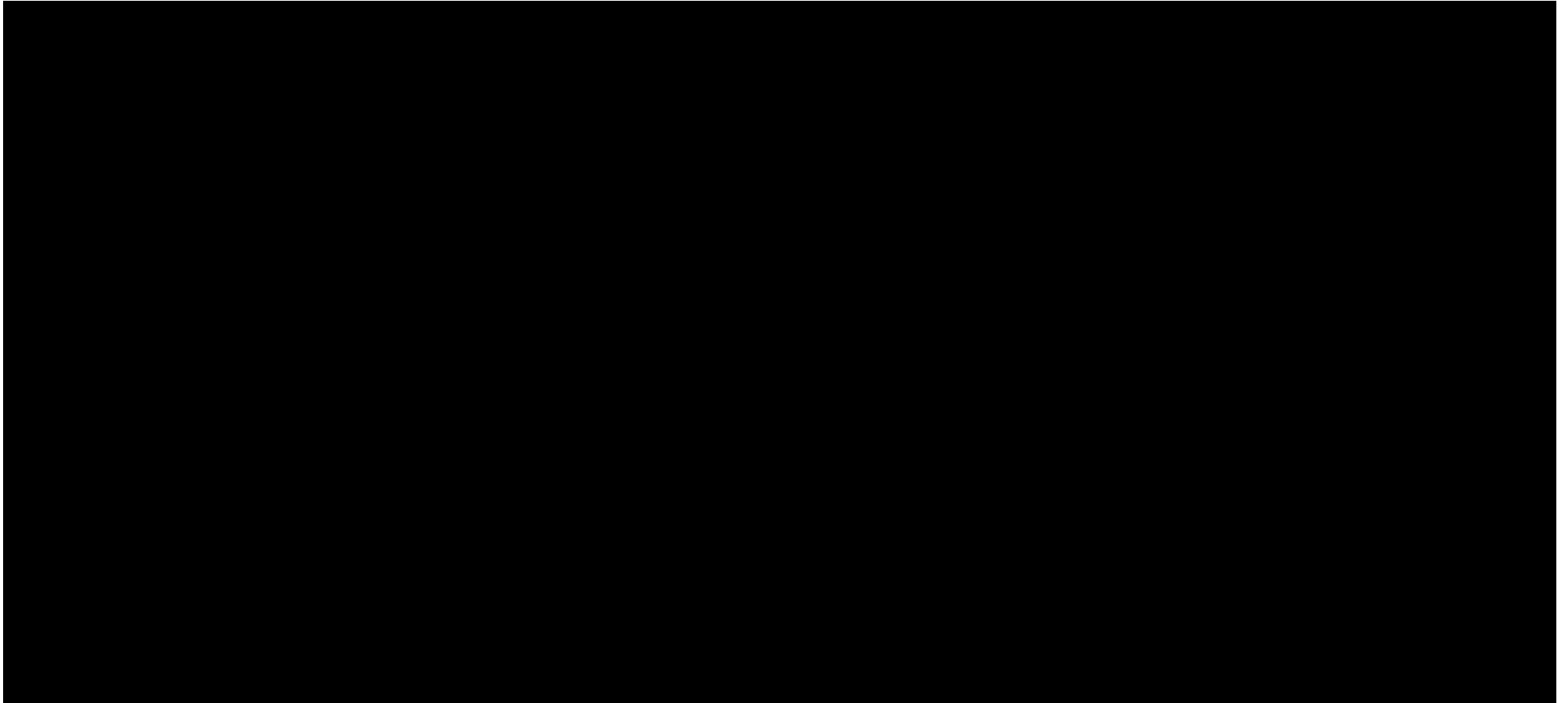




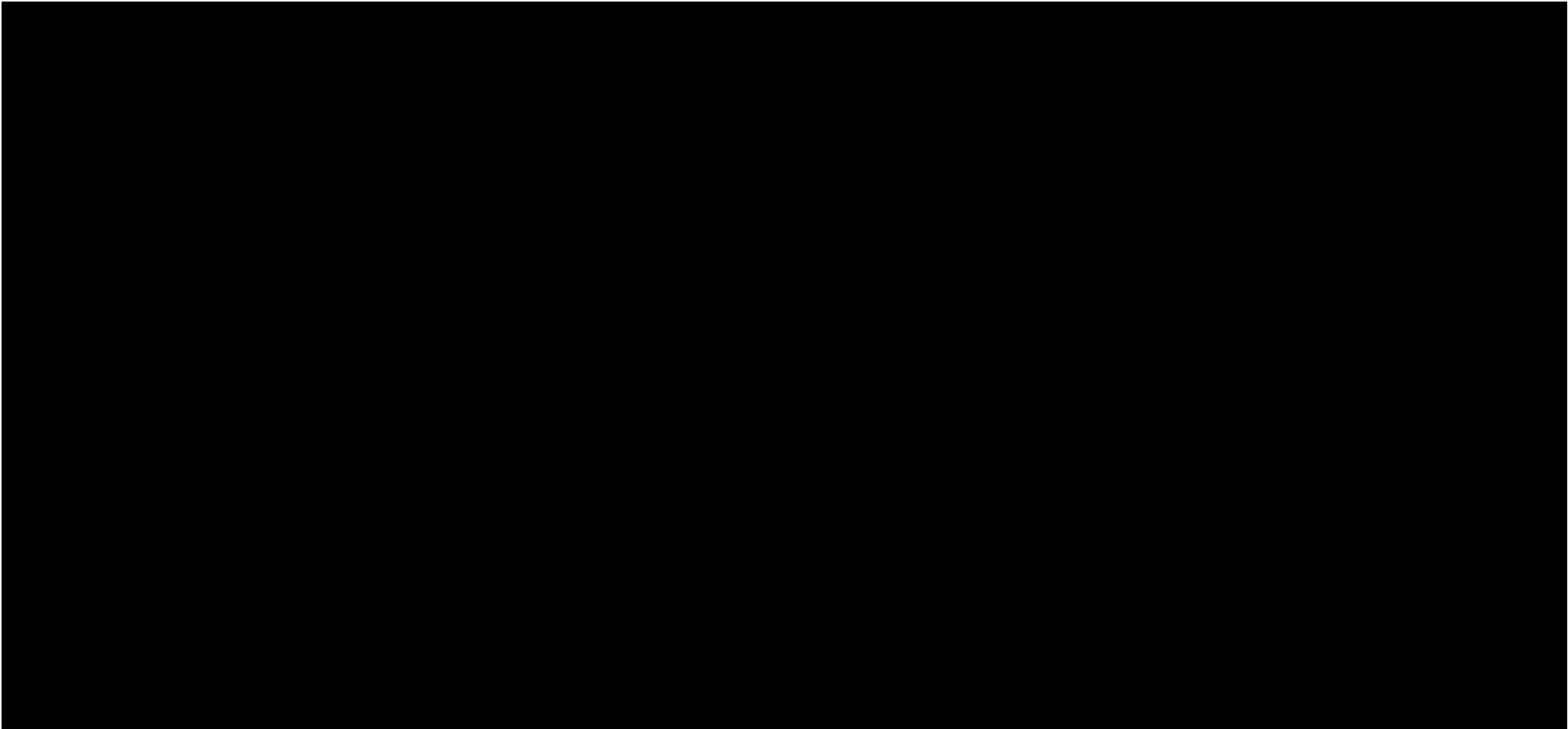


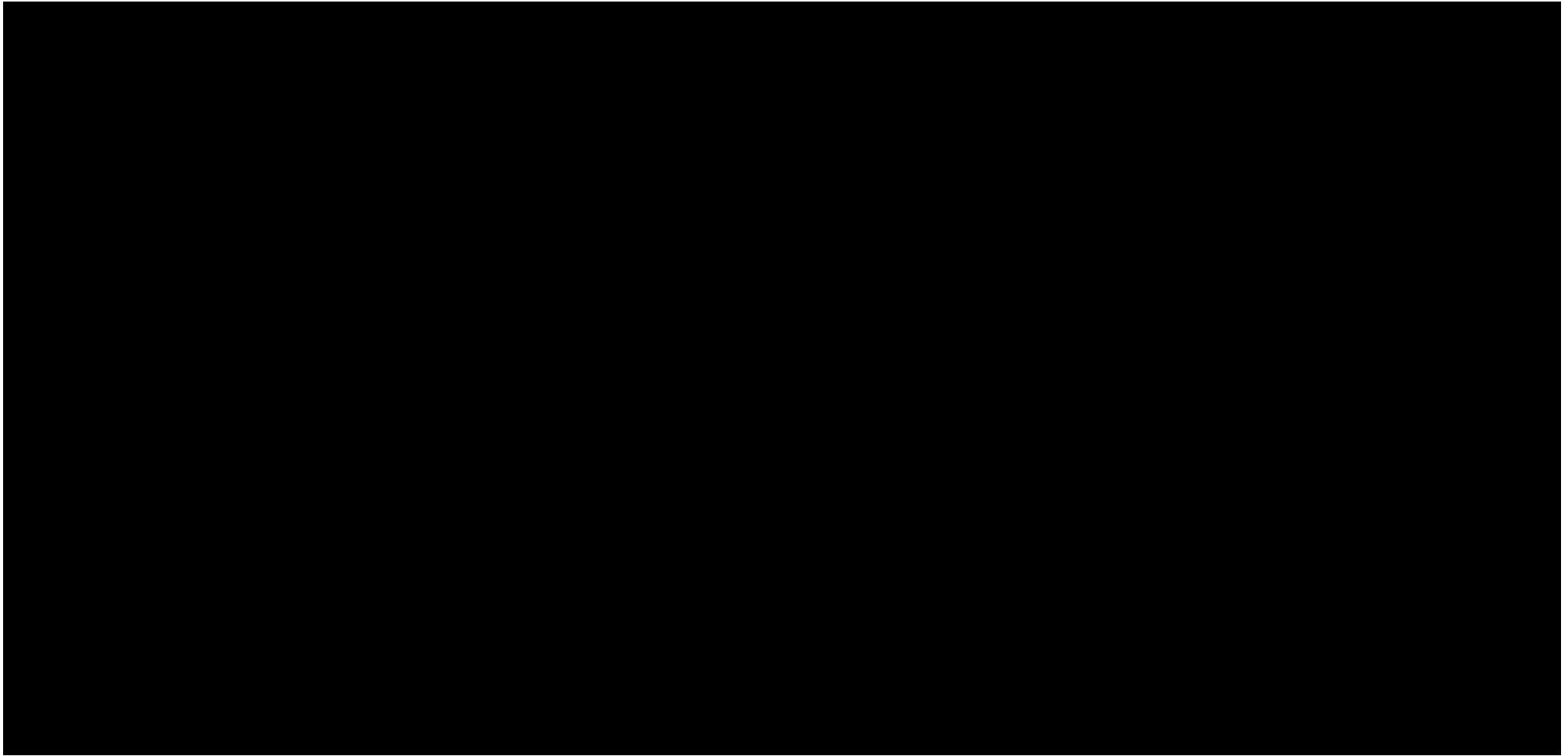


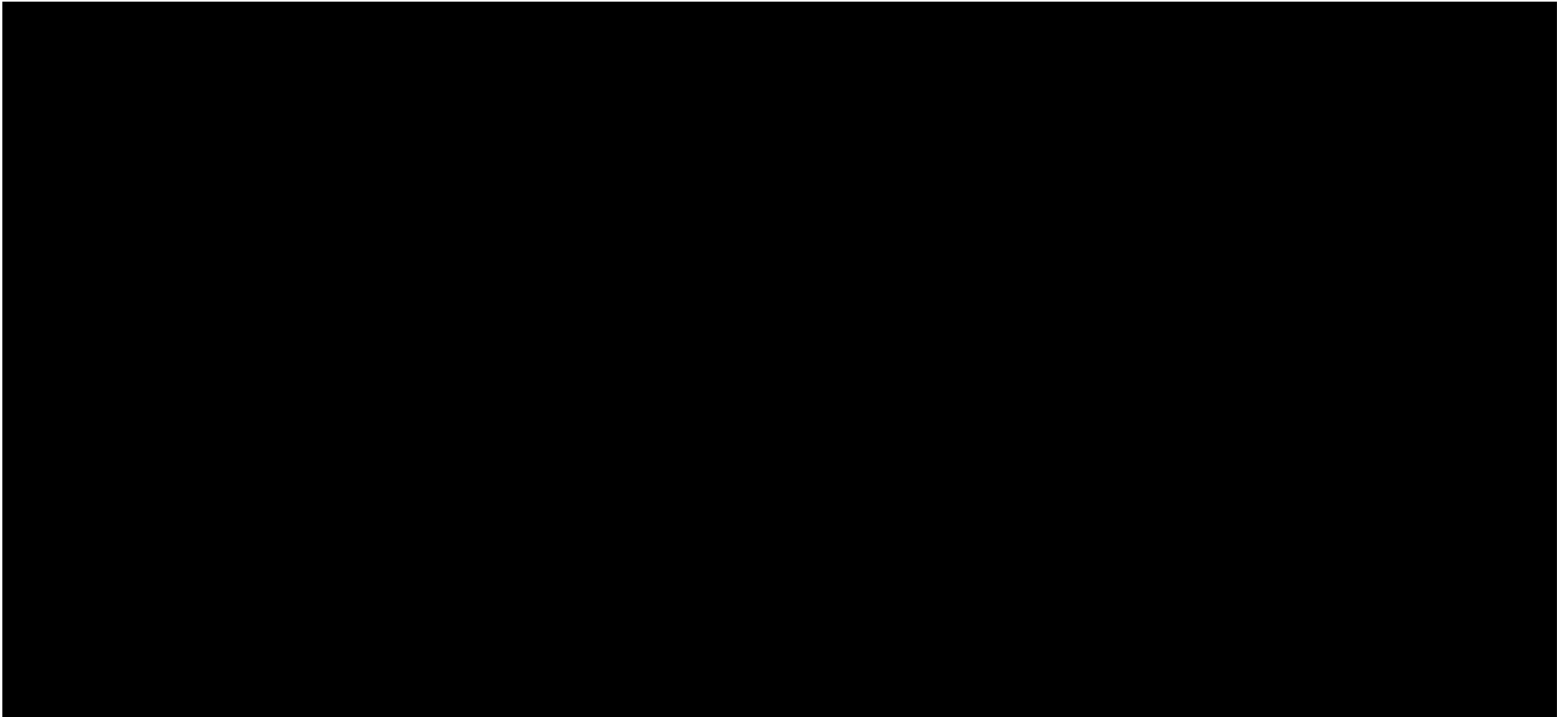


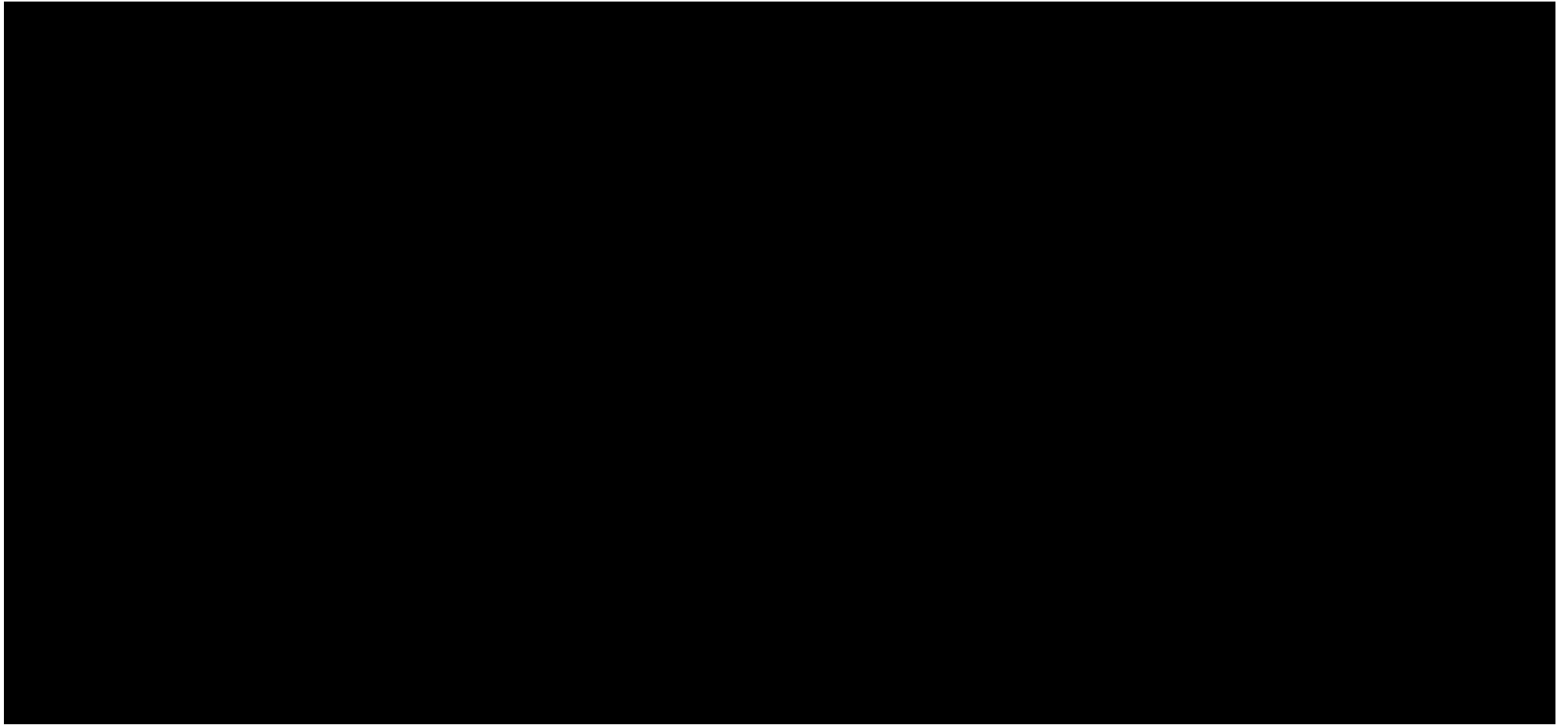


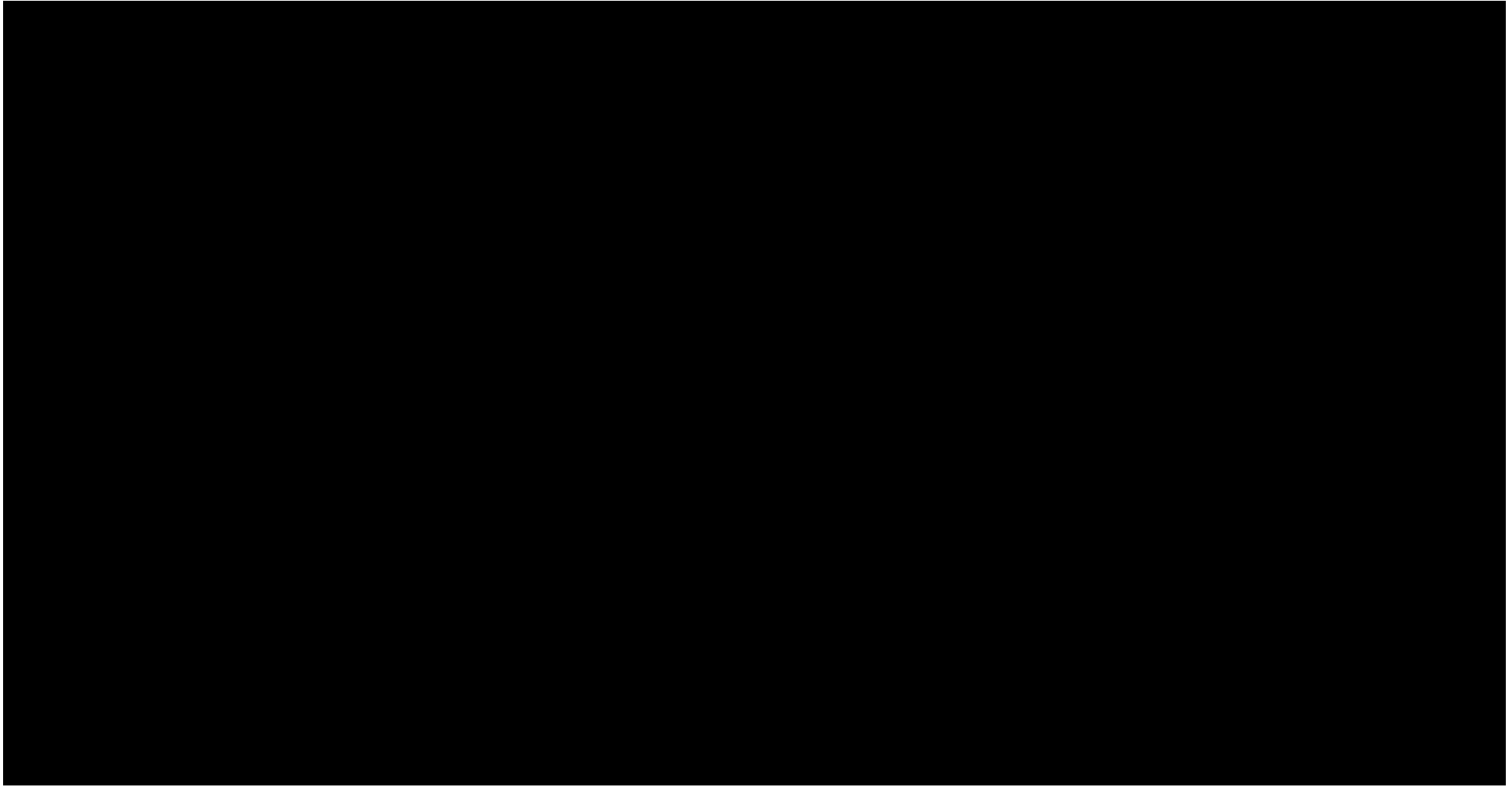


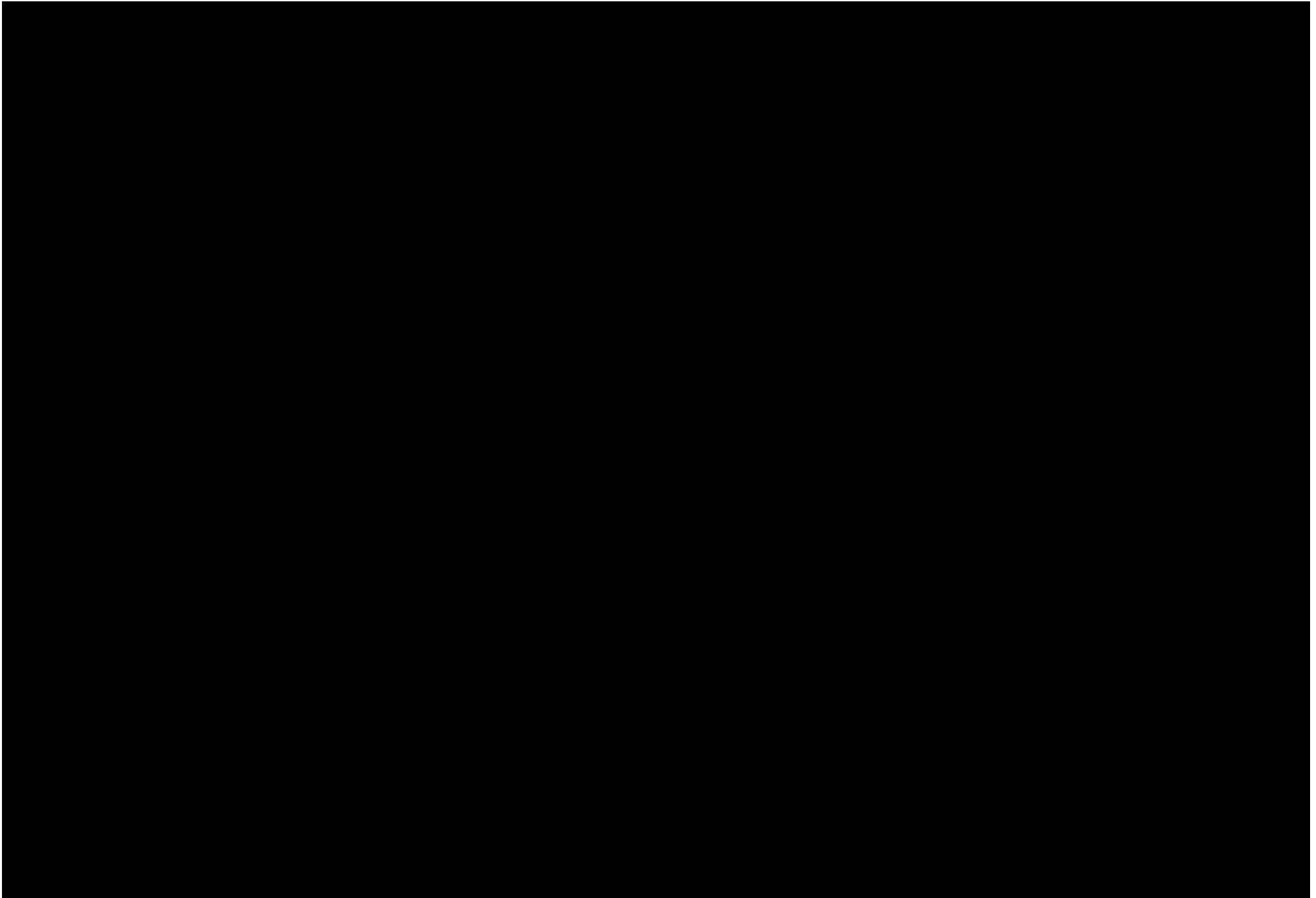










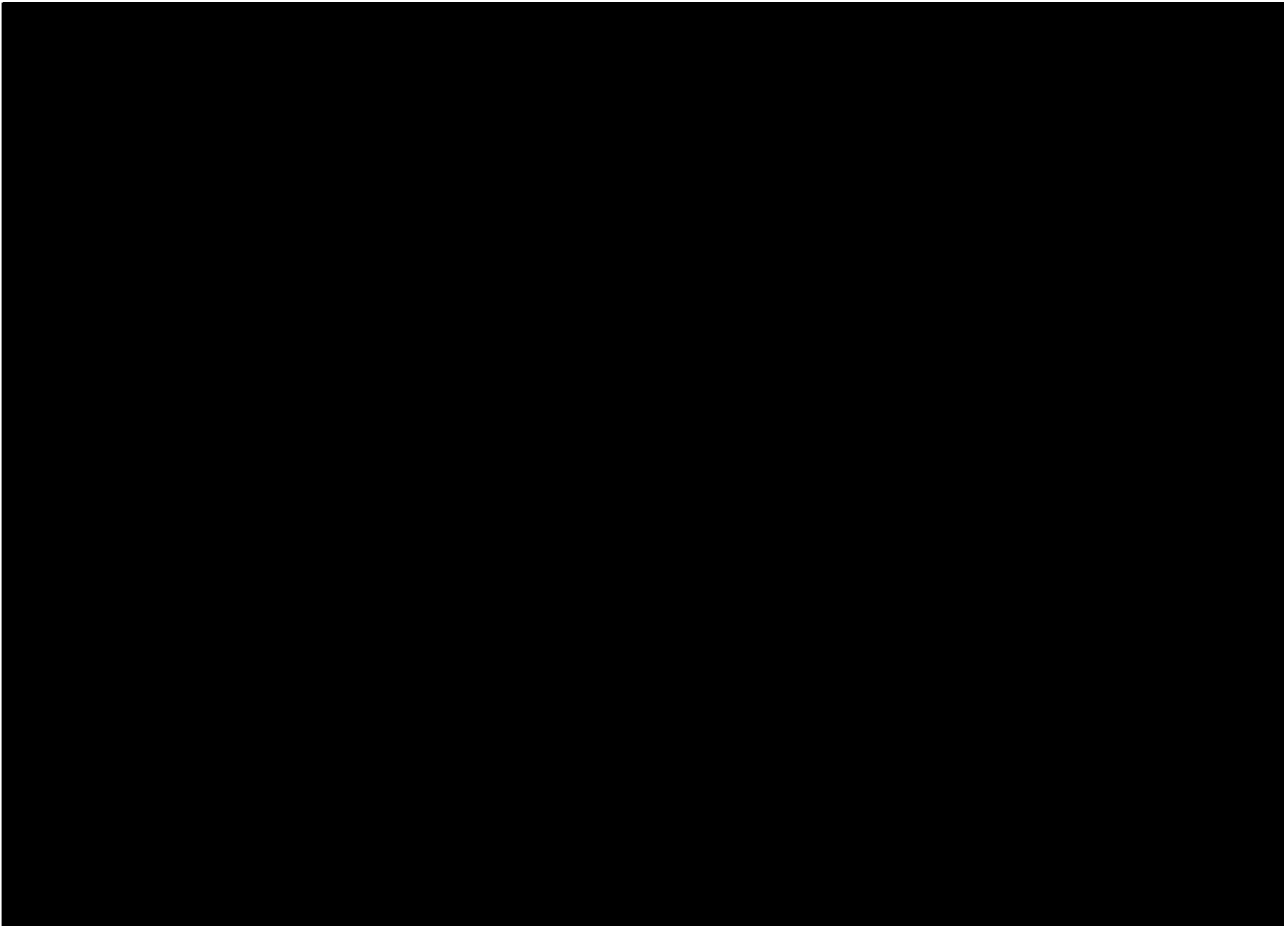


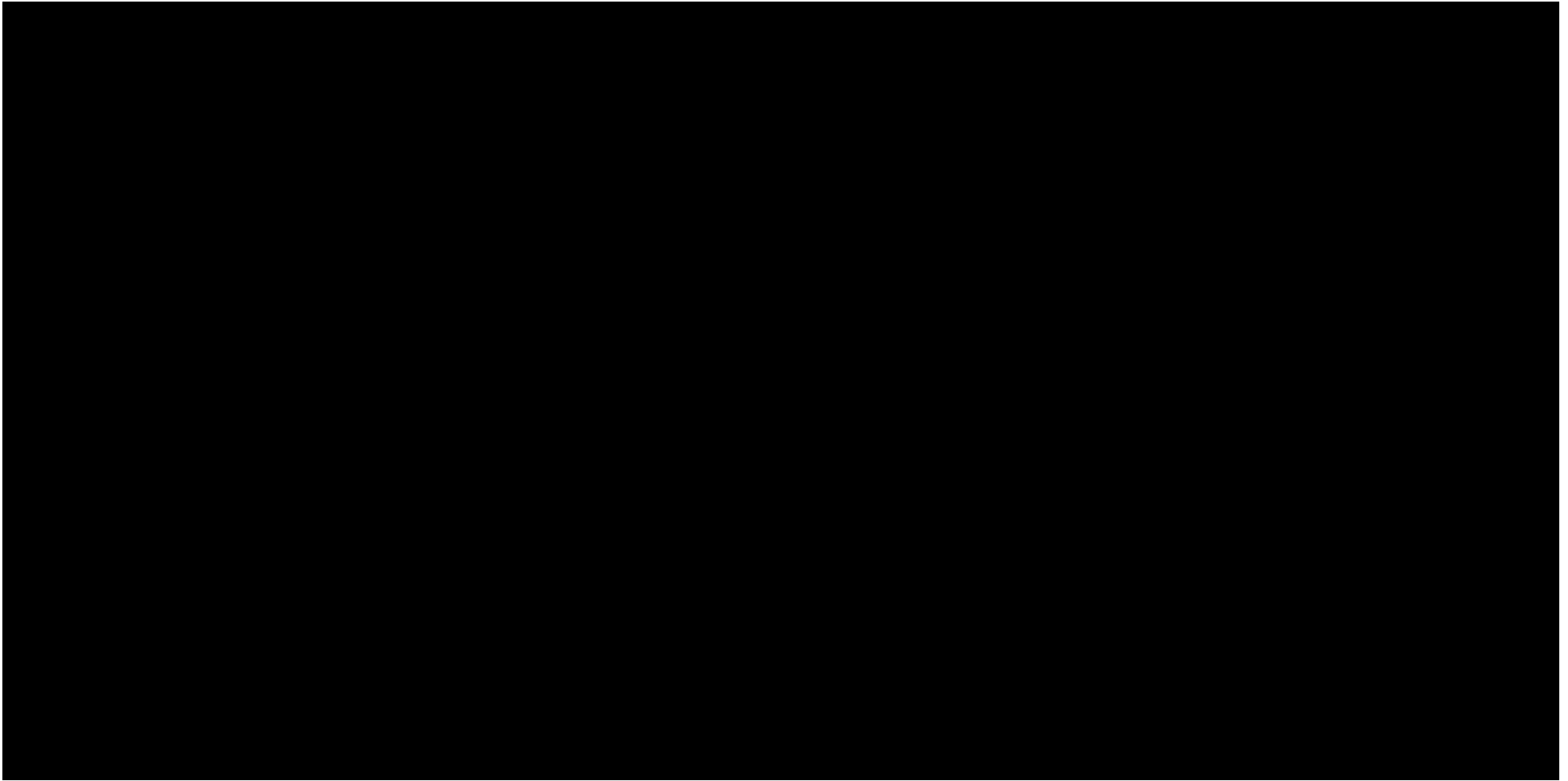
[REDACTED]

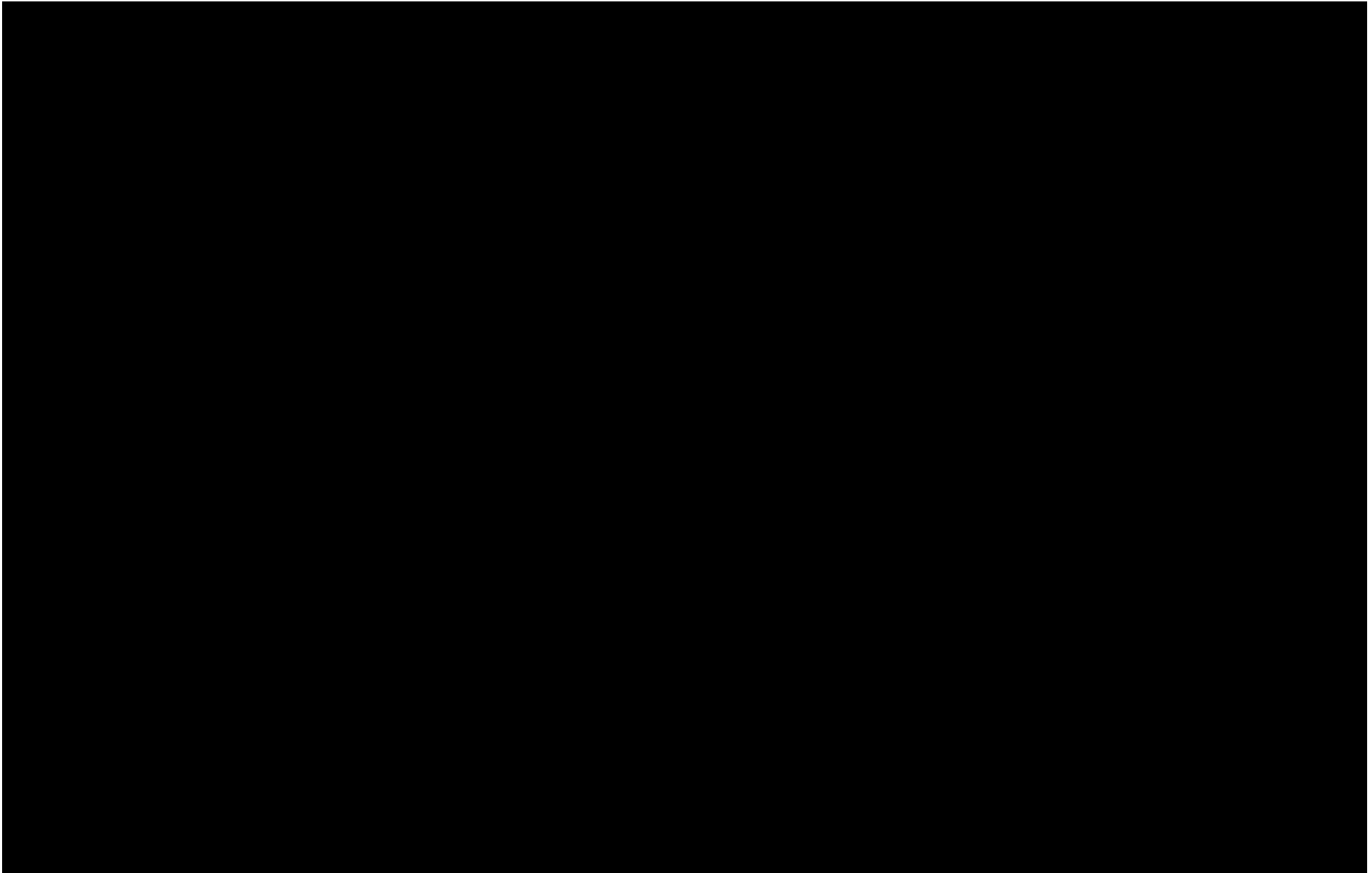
[REDACTED]



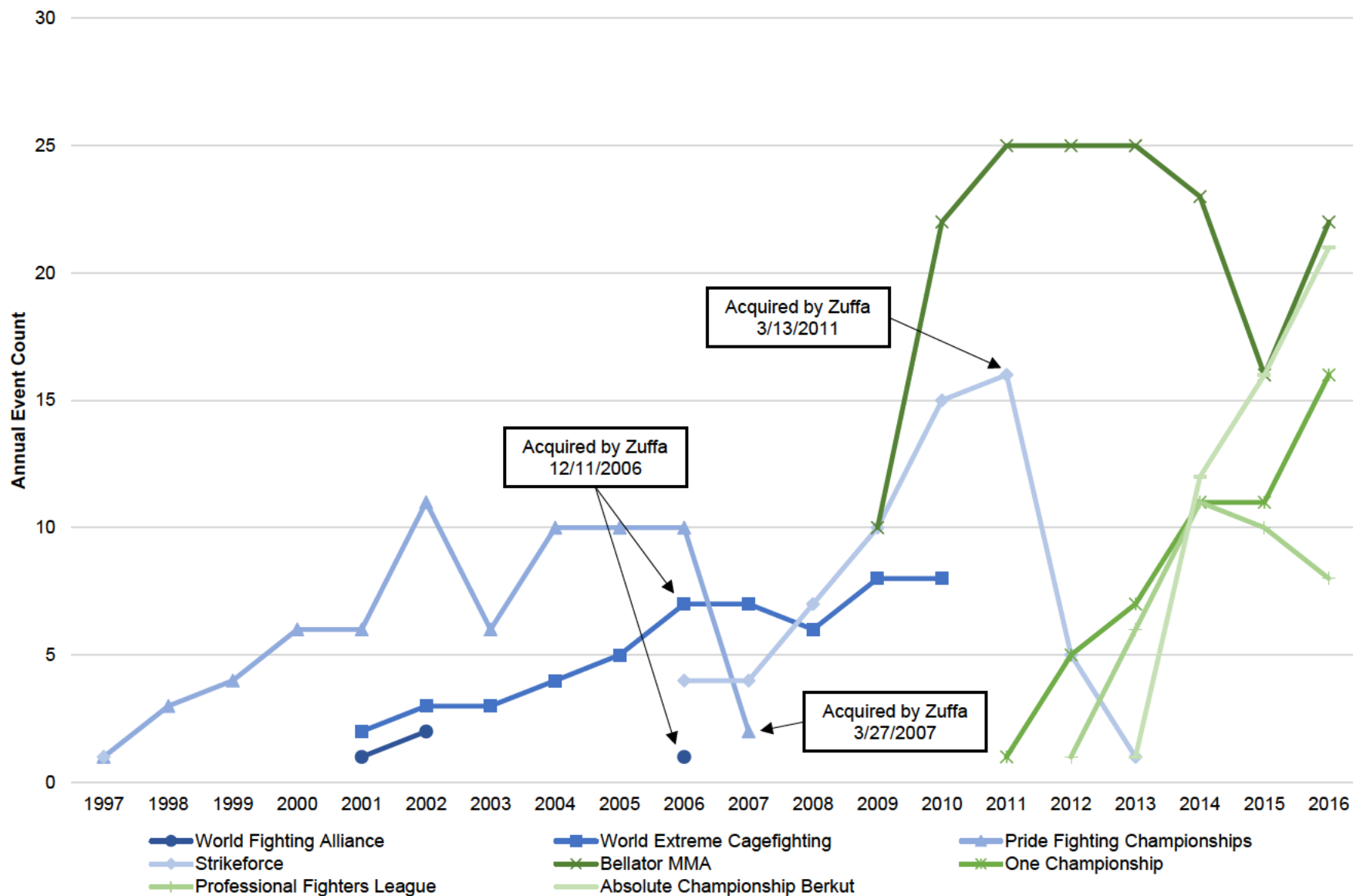




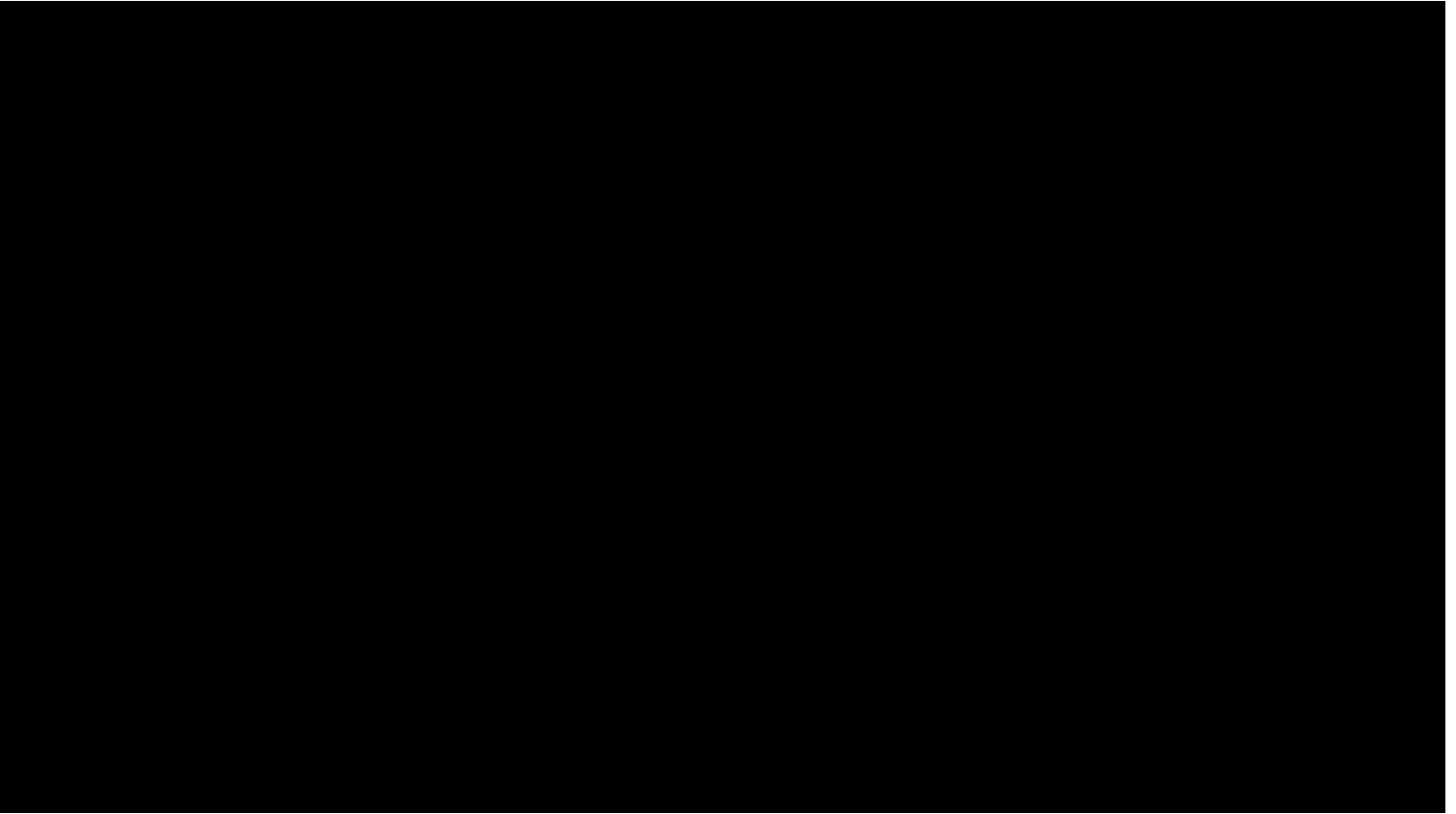




### Exhibit 23 - Annual Event Count for Zuffa Acquired Promoters and Selected Rival Promoters (1997-2016)



Source: Singer Backup ("All Sherdog Scrape.dta")



**Exhibit 25 - Starting Rank of Zuffa Athletes that were Headliners (Top 15) by Year**

Year in Which Athlete First Became Headliner in Streak	Number of Zuffa Headliner Streaks	% of Zuffa Headline Streaks With Non-Headliner Rank at Beginning of Streak	% of Zuffa Headliner Streaks With Non-Headliner Rank at Time of First Ever Zuffa Bout	Average Rank at Beginning of Zuffa Headliner Streak	Average Rank at Time of First Ever Zuffa Bout
<b>Entire Class Period</b>	<b>211</b>	<b>59%</b>	<b>62%</b>	<b>47.1</b>	<b>51.5</b>
1993	3	0%	0%	4.0	4.0
1994	4	0%	0%	9.8	9.3
1995	5	20%	20%	7.2	9.0
1996	4	0%	25%	8.0	10.0
1997	9	22%	33%	20.2	21.7
1998	10	0%	0%	6.7	6.8
1999	24	17%	29%	9.6	12.9
2000	25	0%	12%	6.5	13.9
2001	21	10%	19%	10.0	14.6
2002	19	21%	37%	12.7	15.8
2003	18	22%	39%	11.2	14.5
2004	14	7%	36%	12.1	19.4
2005	24	17%	46%	12.4	18.5
2006	27	41%	52%	26.3	32.0
2007	42	26%	33%	14.1	14.1
2008	21	62%	67%	33.1	34.0
2009	26	58%	69%	39.6	41.7
2010	20	80%	75%	57.1	52.5
2011	57	46%	51%	44.0	46.7
2012	27	67%	67%	49.3	49.6
2013	31	55%	55%	35.1	52.6
2014	37	59%	65%	41.1	44.4
2015	29	79%	79%	58.4	60.4
2016	20	60%	60%	53.4	53.6
2017	8	63%	75%	74.1	77.4

**Notes:**

[1] Headliner means ranks strictly smaller in magnitude than 16.

[2] Streaks are identified by sorting by fighter ID and date and then grouping consecutive bouts that appear for the same promoter. So if an athlete has 2 Zuffa bouts, then 3 Bellator bouts, then 4 Zuffa bouts, there would be three separate streaks. Most often streaks are only 1 bout in length. Athletes can have multiple streaks for the same promoter and for different promoters.

[3] If an athlete was unranked at the beginning of their streak or when they fought their first bout with Zuffa, their first ranking from that streak or with Zuffa overall was used. Streaks are grouped into years based on the year in which the athlete first became a Headliner. Some athletes had more than one streak with Zuffa in a single year in which the athlete was a Headliner.

[4] Athletes' best rank across all weight classes in Dr. Singer's Headliner Market were used in this analysis.

[5] Dr. Singer's Headliner definition omits the following weight classes: men's strawweight, women's featherweight, women's flyweight, and women's atomweight classes. See Singer Report at Footnote 268.

[6] Class Period is December 16, 2010 to present.

[7] If an athlete had a 1-bout streak (i.e. he only fought for a promoter once), then that bout is by definition the first bout in the streak, and the athlete would be considered to have a headline ranking at the beginning of the streak. Even if the athlete wasn't a headliner in his or her previous bout (for another promoter), that was not a part of this streak.

[8] Zuffa acquisitions have been included in "Zuffa".

**Source:**

Singer Backup ("Sherdog Denom for Market Shares.dta")

## Exhibit 26 - Named Plaintiffs that were Headliners (Top 15) by Year

Named Plaintiffs	Year in Which Named Plaintiff Was Headliner	Event Date In Class Period	Headliner for Zuffa
BRANDON VERA	2006		Yes
BRANDON VERA	2008		Yes
CUNG LE	2012	Yes	Yes
JON FITCH	2006		Yes
JON FITCH	2007		Yes
JON FITCH	2008		Yes
JON FITCH	2009		Yes
JON FITCH	2010		Yes
JON FITCH	2011	Yes	Yes
JON FITCH	2012	Yes	Yes
JAVIER VAZQUEZ	2001		
JAVIER VAZQUEZ	2002		
JAVIER VAZQUEZ	2003		
KYLE KINGSBURY	N/A		
NATE QUARRY	N/A		

### Notes:

- [1] Headliner means ranks strictly smaller in magnitude than 16.
- [2] Athletes' best rank across all weight classes in Singer's Headliner Market were used in this analysis.
- [3] Dr. Singer's Headliner definition omits the following weight classes: men's strawweight, women's featherweight, women's flyweight, and women's atomweight classes. See Singer Report at Footnote 268.
- [4] Class Period is December 16, 2010 to Present.
- [5] Zuffa acquisitions have been Included in "Zuffa".

### Source:

Singer Backup ("Sherdog Denom for Market Shares.dta")

**Exhibit 27 - Number of Zuffa Athletes that were Headliners (Top 15) by Year and in Entire Class Period**

<b>Year</b>	<b>All Zuffa Athletes</b>	<b>Zuffa Athletes that were Headliners</b>	<b>% Zuffa Athletes that were Headliners</b>
<b>Entire Class Period</b>	<b>1,214</b>	<b>269</b>	<b>22%</b>
1993	10	3	30%
1994	37	5	14%
1995	38	5	13%
1996	40	5	13%
1997	52	11	21%
1998	38	10	26%
1999	58	24	41%
2000	65	25	38%
2001	48	30	63%
2002	66	34	52%
2003	57	30	53%
2004	54	26	48%
2005	102	32	31%
2006	174	44	25%
2007	285	70	25%
2008	301	75	25%
2009	333	83	25%
2010	343	81	24%
2011	485	117	24%
2012	449	111	25%
2013	452	125	28%
2014	565	131	23%
2015	576	138	24%
2016	554	136	25%
2017	331	62	19%

**Notes:**

[1] Headliner means ranks strictly smaller in magnitude than 16.

[2] Athletes' best rank across all weight classes in Dr. Singer's Headliner Market were used in this analysis.

[3] Dr. Singer's Headliner definition omits the following weight classes: men's strawweight, women's featherweight, women's flyweight, and women's atomweight classes. See Singer Report at Footnote 268.

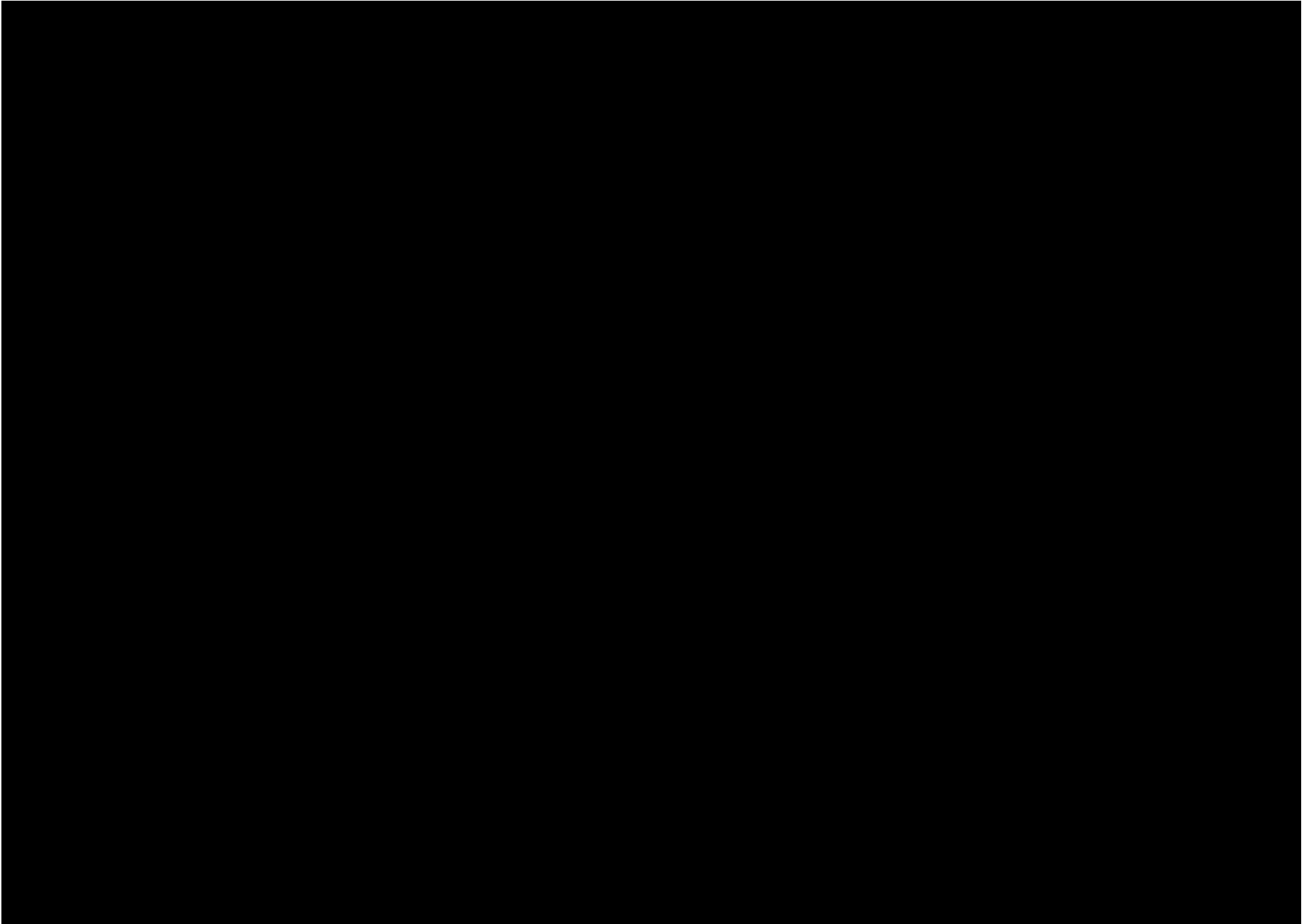
[4] Class Period is December 16, 2010 to Present.

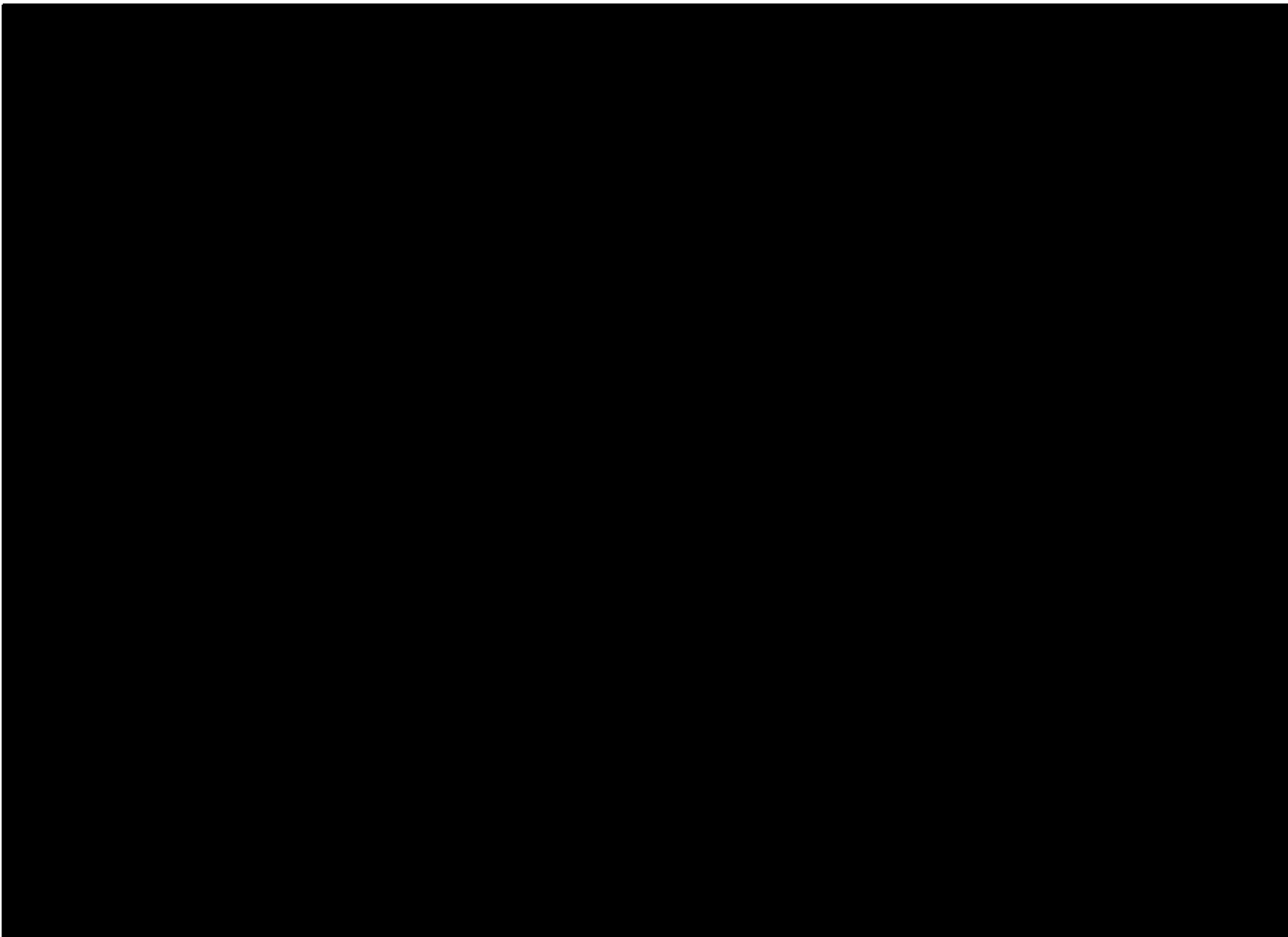
[5] Zuffa acquisitions have been Included in "Zuffa".

**Source:**

Singer Backup ("Sherdog Denom for Market Shares.dta")







**Exhibit 30 - Total Live Attendance at Events in Dr. Singer's "Tracked" Market**

Year	Event Count		Average Event Attendance		Total Live Attendance
	Zuffa	Non-Zuffa	Zuffa	Non-Zuffa	
2006	18	22	7,793	14,596	461,393
2007	27	11	12,454	14,596	496,807
2008	26	25	9,491	10,227	502,443
2009	28	27	10,573	11,923	617,980
2010	32	41	11,158	7,093	647,857
2011	38	34	11,314	9,156	741,229
2012	36	26	10,787	9,156	626,388
2013	34	25	12,108	4,216	517,077
2014	46	23	10,107	8,243	654,494
2015	41	16	11,575	8,243	606,463

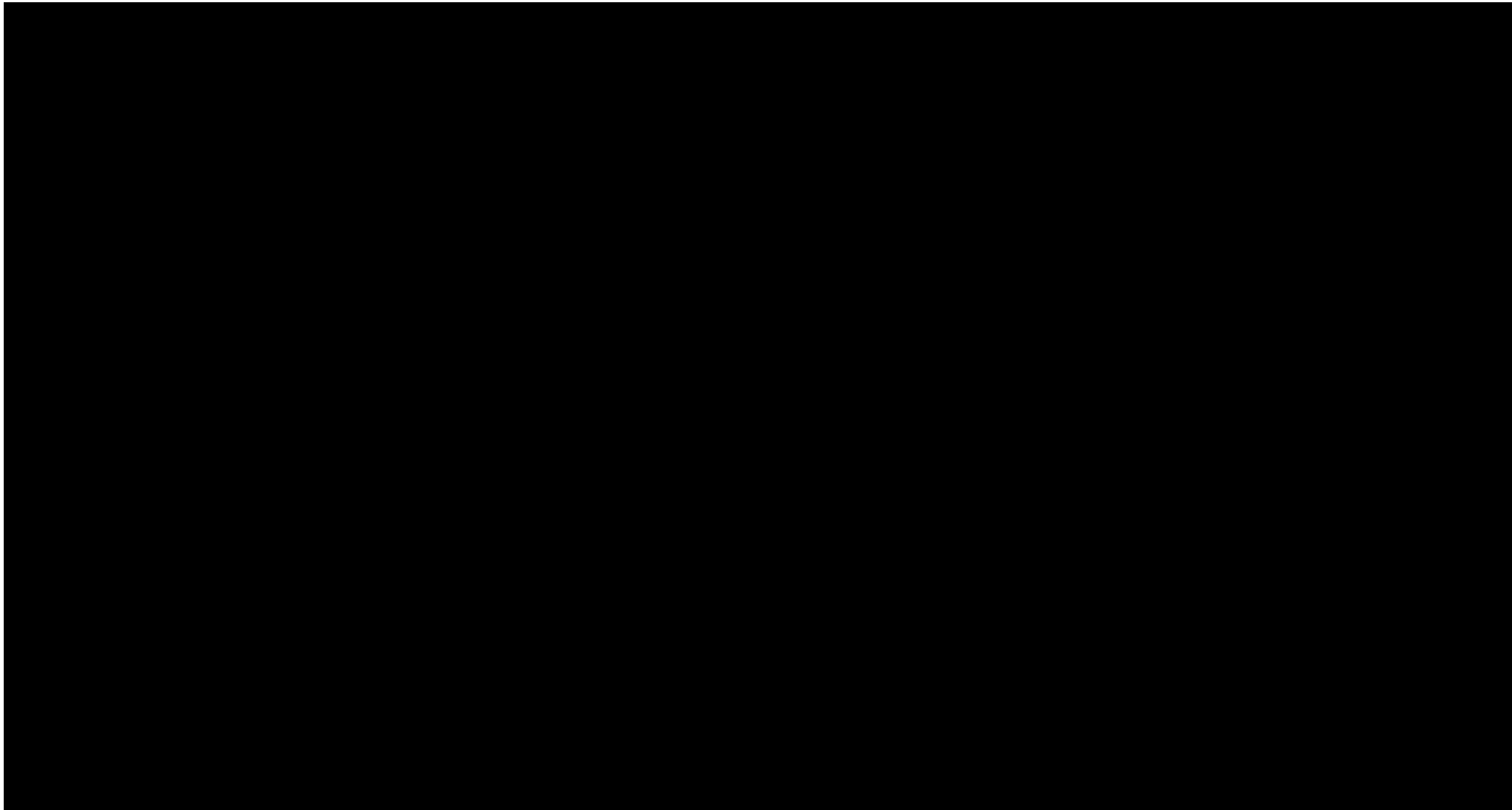
**Notes:**

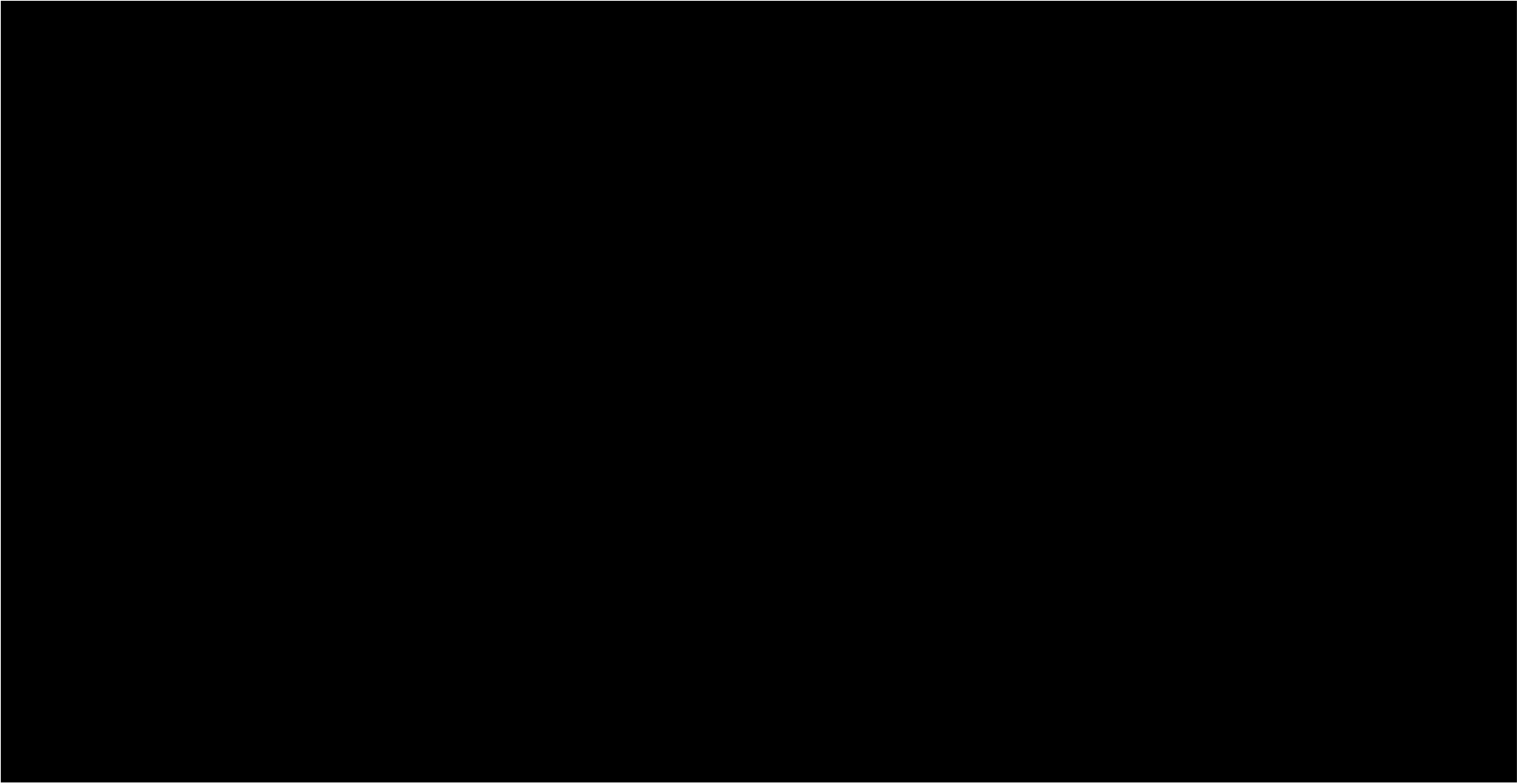
[1] Total live attendance is equal to the number of events multiplied by average event attendance.

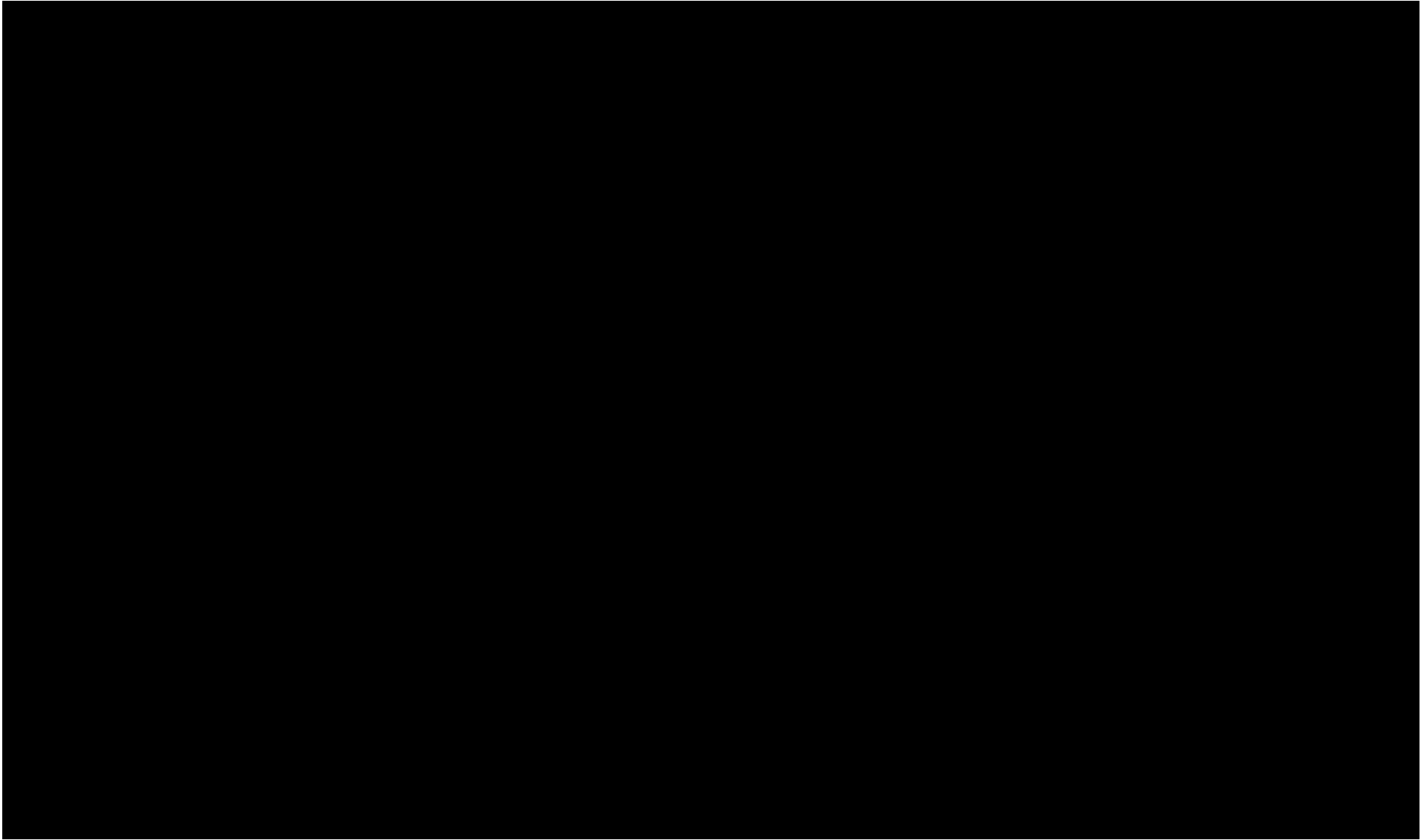
[2] Average live attendance at Zuffa and Non-Zuffa events is calculated from MMA Payout using same methodology Dr. Singer uses to calculate foreclosure share revenue weights.

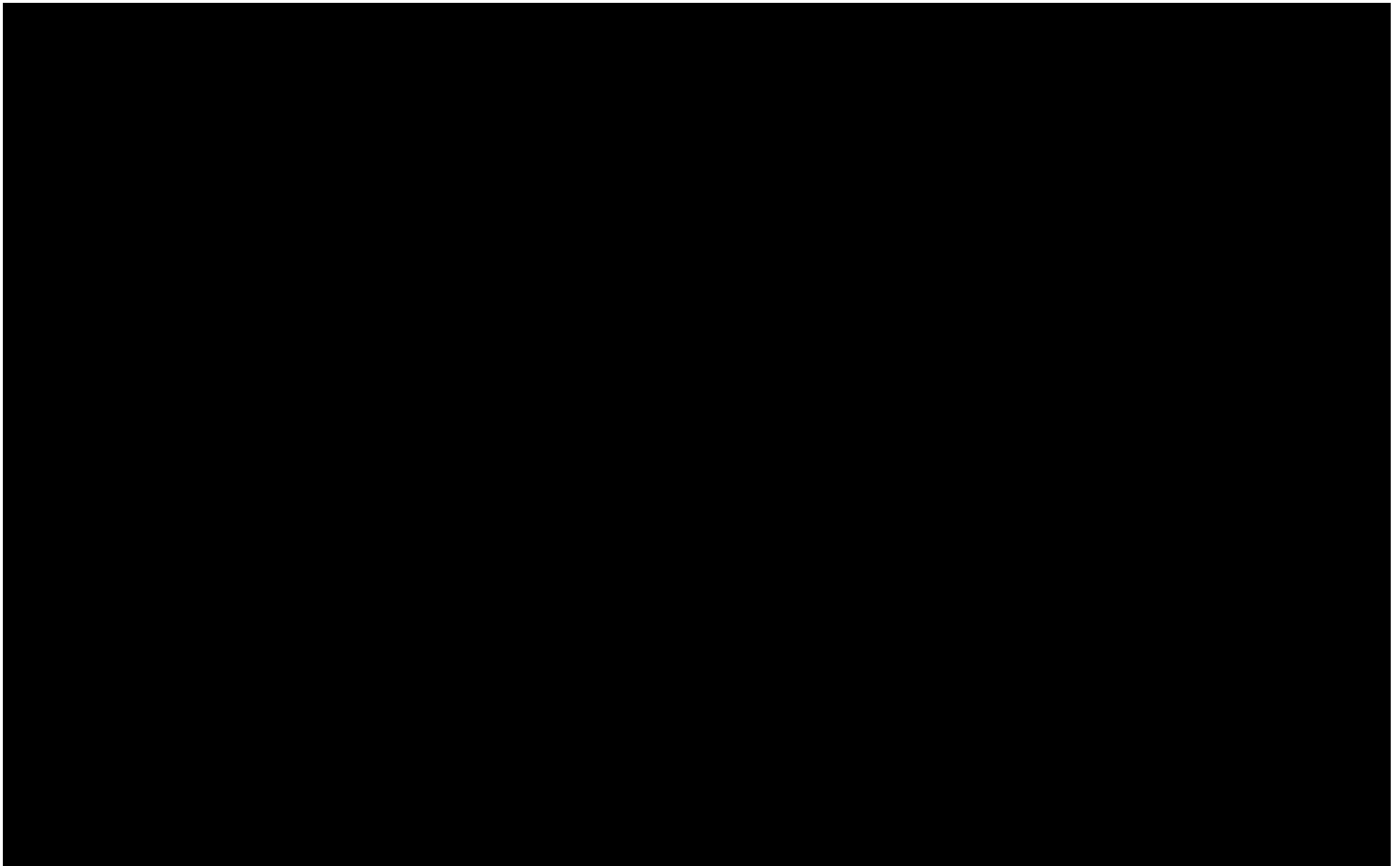
**Sources:**

Singer Backup ("Figures 4A, 4B, 4C, & 4D - Zuffa and Non-Zuffa Event-Fighter Counts by Year.xlsx", "Weight Data for Foreclosure Shares.xlsx")









**List of Errata for Expert Report of Professor Robert H. Topel**









































